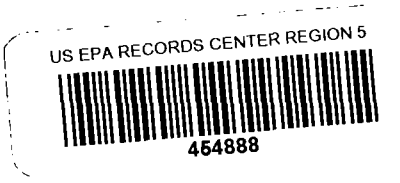
PRC Environmental Management, Inc.
200 East Randolph Drive
Suite 4700
Chicago, IL 60601
312-856-8700
Fax 312-938-0118

September 15, 1995

PRC

Ms. Jeanne Griffin
U.S. Environmental Protection Agency
Region 5
77 West Jackson Boulevard
Chicago, IL 60604



Subject: **Jackson County Landfill**
Jackson, Ohio
EPA ID No. OHD 980 993 554
Focused Site Inspection Prioritization
Contract No. 68-W8-0084, Work Assignment No. 35-5JZZ

Dear Ms. Griffin:

PRC Environmental Management, Inc. (PRC), has prepared the site evaluation report (SER) for the above-referenced site (Enclosure 1). PRC reviewed available information, conducted a site reconnaissance, and prepared a preliminary Hazard Ranking System (HRS) score for the Jackson County Landfill site. Because no environmental samples were collected during the screening site inspection conducted in 1985, PRC also collected soil and sediment samples at the site to characterize site conditions. Based on PRC's findings, the preliminary HRS score for the site is less than 28.50. Therefore, PRC recommends that the site receive a no further action (NFA) designation.

Photographs taken during the site reconnaissance and sampling visit are included in the appendix of the SER. The U.S. Environmental Protection Agency (EPA) recommendation form is included in Enclosure 2. The Jackson County Landfill site preliminary HRS score is documented in a transmittal memorandum and preliminary scoresheets in Enclosure 3.

If you have any questions, please call me at 312/856-8700.

Sincerely,

FOR

Christopher Scott
Project Manager

Enclosures (3)

cc: Thomas Short, EPA Project Officer (letter only)
Brigitte Manzke, EPA Contracting Officer (letter only)
Pete Thompson, OEPA Southeast District Office
Majid Chaudhry, PRC Program Manager (letter only)

ENCLOSURE 1

FOCUSED SITE INSPECTION PRIORITIZATION
SITE EVALUATION REPORT

JACKSON COUNTY LANDFILL
JACKSON, OHIO

FOCUSED SITE INSPECTION PRIORITIZATION
SITE EVALUATION REPORT

JACKSON COUNTY LANDFILL
1841 SMITH BRIDGE ROAD
JACKSON, OHIO

EPA ID NO. OHD 980 993 554

Prepared for

U.S. ENVIRONMENTAL PROTECTION AGENCY
Site Assessment Section
77 West Jackson Boulevard
Chicago, IL 60604

Date Prepared	:	September 15, 1995
EPA Region	:	5
Contract No.	:	68-W8-0084
Work Assignment No.	:	35-5JZZ
PRC Project No.	:	030-003593
Prepared by	:	PRC Environmental Management, Inc. (Scott J. Brockway)
PRC Project Manager	:	Christopher Scott
Telephone No.	:	312/856-8700
EPA Work Assignment Manager	:	Jeanne Griffin
Telephone No.	:	312/886-3007

CONTENTS

FIGURES

1.0 INTRODUCTION

Under Contract No. 68-W8-0084, Work Assignment No. 35-5JZZ, PRC Environmental Management, Inc. (PRC), has evaluated the Jackson County Landfill (JCL) site in Jackson, Jackson County, Ohio, as a potential candidate for the National Priorities List (NPL) and has prepared this site evaluation report. (The site is also referred to as Jackson Sanitary Landfill in some file documents reviewed). Using the Hazard Ranking System (HRS), PRC performed focused site inspection prioritization (FSIP) activities for the site to determine whether, or to what extent, it poses a threat to human health and the environment. This report presents the results of PRC's evaluation and summarizes the site conditions and targets pertinent to the migration and exposure pathways associated with the site. Information was obtained from U.S. Environmental Protection Agency (EPA) and Ohio Environmental Protection Agency (OEPA) files, from the Ohio Department of Natural Resources (ODNR), and from the site reconnaissance and sampling visit conducted by PRC.

This report has seven sections, including this introduction. Section 2.0 describes the site and provides a brief site history. Section 3.0 provides information about previous investigations conducted at the site. Section 4.0 provides site reconnaissance findings and observations. Section 5.0 provides information about FSIP sampling activities. Section 6.0 provides information about the four migration and exposure pathways (groundwater migration, surface water migration, soil exposure, and air migration) that can be scored. Section 7.0 summarizes conditions at the site. References used in the preparation of this report are listed at the end of the text. In addition, Appendix A contains photographs taken during the site reconnaissance and sampling visit, and Appendix B summarizes sample analytical results.

Persons present at the site reconnaissance meeting on January 19, 1995, were Scott Brockway and Keith Foszcz, PRC; Steve Benson, SBA Consultants, Inc. (SBA), representing J. Gregory Fields, JCL owner; Mike Bush, Manager, Sanitary Commercial Services (SCS); and Linda Bondurant, Sales Service Representative, SCS. Persons present during FSIP sampling activities on June 9, 1995, were Scott Brockway, Keith Foszcz, and Christine Hirschman of PRC.

2.0 SITE DESCRIPTION AND HISTORY

This section describes the JCL site and summarizes the site history and operations.

2.1 SITE DESCRIPTION

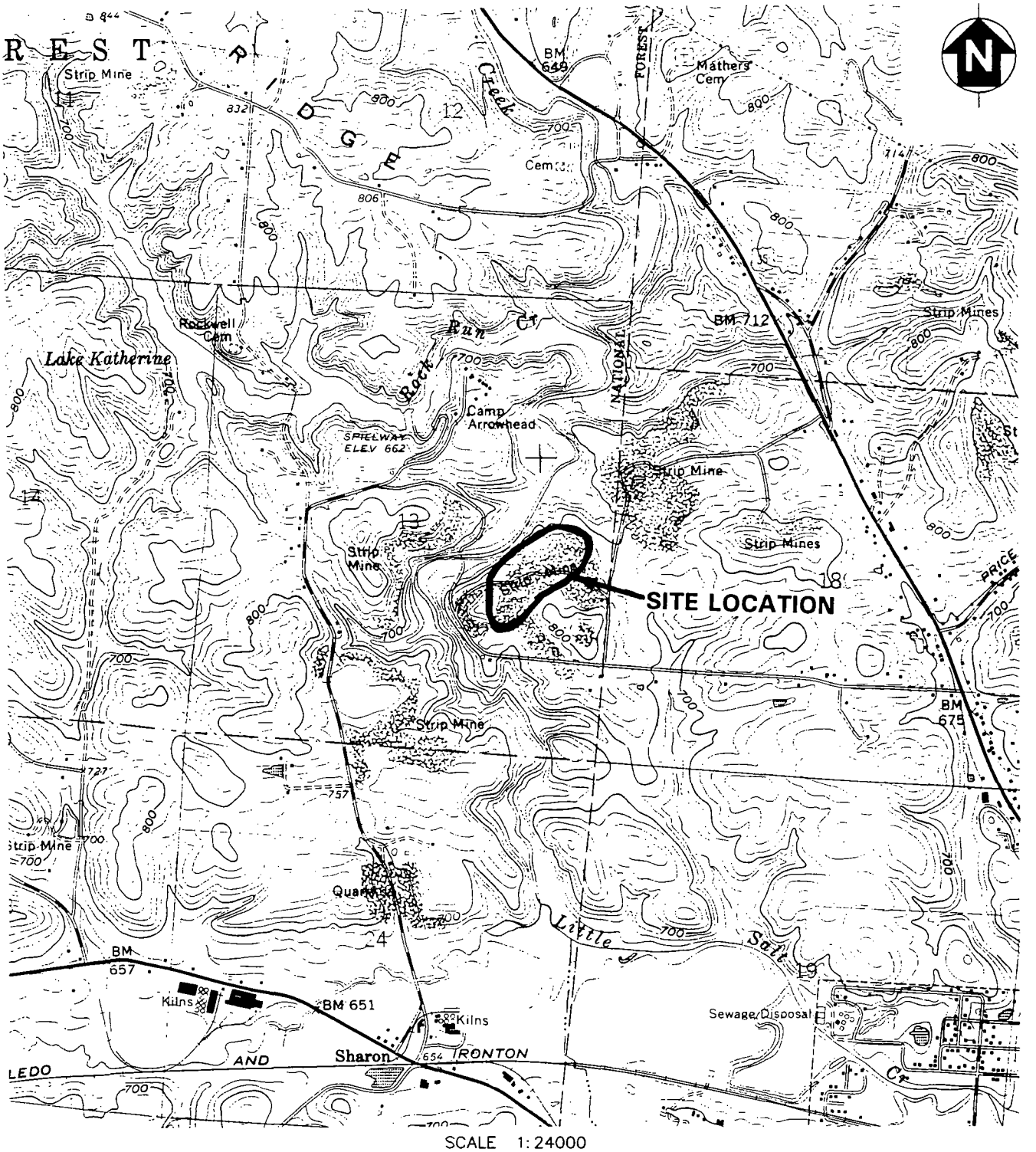
The JCL site is located at 1841 Smith Bridge Road in Jackson, Jackson County, Ohio (latitude 39°04' 45" N, longitude 82°39'58" W) (USGS 1975). The site's location is shown in Figure 1. The site is a closed municipal landfill that occupies about 40 acres in a rural area. The site is bordered on the north by farmland, on the east by former strip mines, on the south by Smith Bridge Road, and on the west by Little Salt Creek; the Lake Katherine State Nature Preserve lies west of Little Salt Creek. The site is located about 2 miles northwest of downtown Jackson, and the predominant land use within 1 mile of the site is residential. The nearest residences are located along the south side of Smith Bridge Road less than 0.25 mile south of the former landfill area.

SCS currently operates a waste hauling business at the site. Structures on the site property include office and maintenance buildings operated by SCS. Access to the site is partially restricted by a chain-link fence and gate that block the main entrance on the south and another chain-link fence with a permanent closure sign that blocks the entrance to the former landfill area. However, the site is not secured by continuous fencing.

2.2 SITE HISTORY AND OPERATIONS

The JCL site is situated in an area previously strip-mined for coal. The dates of the strip mining are unknown. SCS, then owned by J. Gregory Fields, operated the site landfill from 1962 to 1987. Of the site's 40 acres, 22.5 acres was used for landfilling, and 17.5 acres was used for borrow areas, a landfill office, and a maintenance garage. A site layout is shown in Figure 2.

JCL was licensed by the State of Ohio in 1969 (OEPA 1977), and its license expired in 1984 (E&E 1985). The landfill was licensed to accept household, commercial, agricultural, industrial, institutional, incinerator, and construction wastes. In 1977, SCS estimated that 30 percent of the



SOURCE: MODIFIED FROM USGS, JACKSON, OHIO, QUADRANGLE, 1975

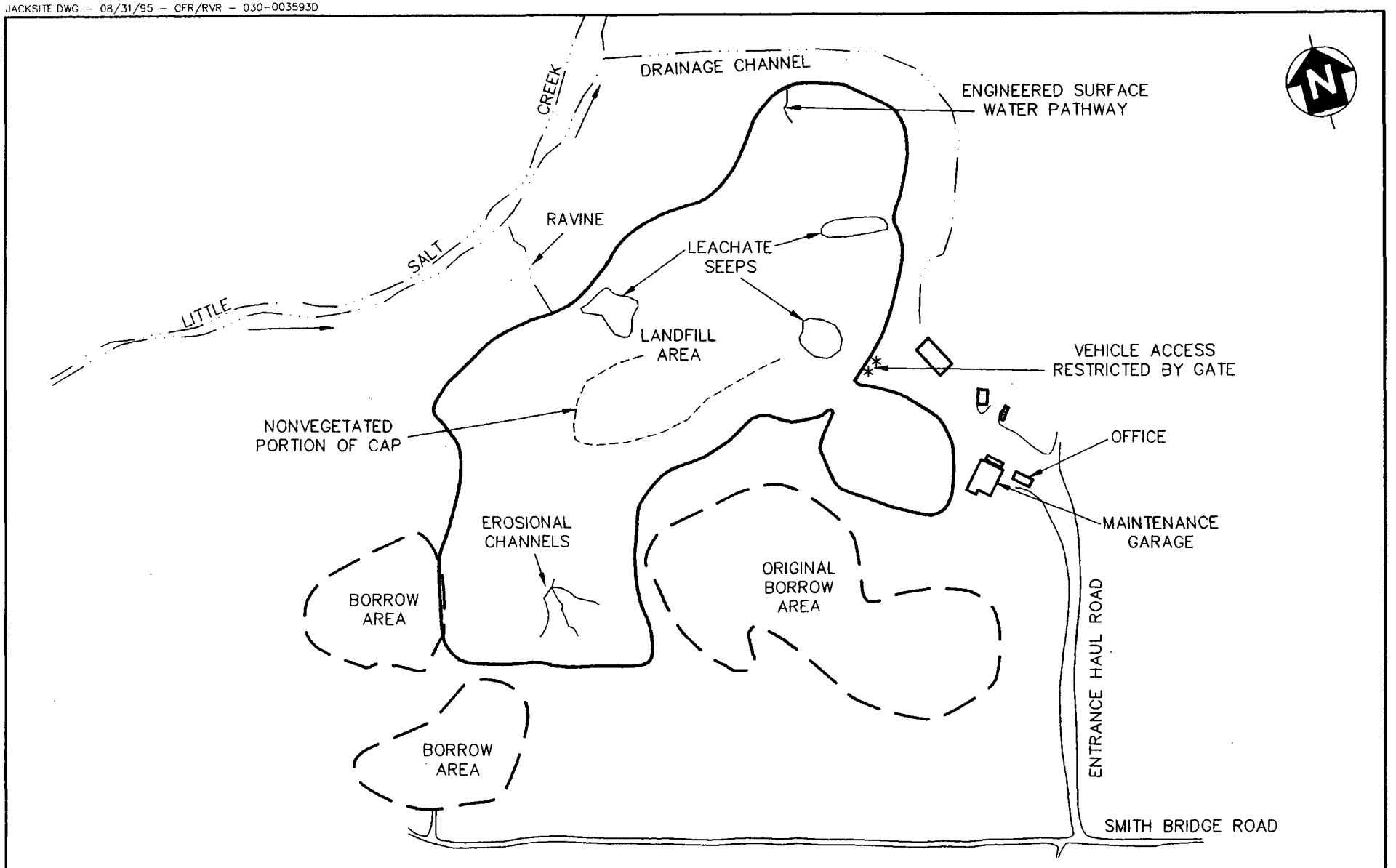
JACKSON COUNTY LANDFILL
JACKSON COUNTY, OHIO

FIGURE 1

SITE LOCATION

PRC ENVIRONMENTAL MANAGEMENT, INC.

JACKSITE.DWG – 08/31/95 – CFR/RVR – 030-003593D



SOURCE: MODIFIED FROM BURGESS & NIPLE, LTD. 1987 AS REVISED BY SBA, 1991

JACKSON COUNTY LANDFILL
JACKSON COUNTY, OHIO

FIGURE 2

SITE LAYOUT

PRC ENVIRONMENTAL MANAGEMENT, INC.

waste received was generated by households and that 69.5 percent was a combination of commercial, agricultural, industrial, institutional, incinerator, and construction wastes; SCS estimated that the remaining 0.5 percent was sludge consisting of paint residue mixed with oil, water, and cleaning materials (OEPA 1977). Reportedly, the landfill is not lined.

In 1984, OEPA issued a Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) information request letter to the Goodyear Tire & Rubber Company (Goodyear) facility in Jackson, Ohio. OEPA requested that Goodyear provide information regarding its waste generation, transportation, storage, and disposal practices (OEPA 1984a). Goodyear reported disposing of 5,772 55-gallon drums containing waste acetone mixture, waste paint mixture, and waste styrene mixture at JCL from 1974 to 1984; of the 5,772 drums, 5,459 contained waste acetone or waste paint, and 313 contained waste styrene mixture. Goodyear indicated that the waste acetone mixture consisted of acetone and polyester resin; the waste paint mixture consisted of cyclohexanone, methylene chloride, isobutyl alcohol, methyl ethyl ketone, methyl isobutyl ketone, toluene, and xylene; and the waste styrene mixture consisted of styrene and polyester resin (Goodyear 1984).

Goodyear determined the quantity of drums that it had disposed of at JCL by calculating the amount of waste material it had shipped to the landfill between 1981 and 1984 based on its hazardous waste manifests and then estimating the quantities of each waste stream shipped to the landfill between 1974 and 1980 based on its calculations (Goodyear 1984). Mr. Fields disputed the accuracy of Goodyear's estimate of the number of drums disposed of at the site and stated that the actual number was less than Goodyear's estimate (E&E 1985). SCS employees interviewed during the site reconnaissance supported Mr. Fields' statements regarding the amount of waste received from Goodyear; these employees worked for Mr. Fields during the period when Goodyear's wastes were disposed of at JCL (PRC 1995c). PRC could find no other documentation regarding the amount of Goodyear waste disposed of at the site.

Steve Benson of SBA informed PRC during the site reconnaissance that the landfill was capped and seeded during closure activities in 1987. Also, Mr. Benson stated that landfill capping regulations had been modified by OEPA in 1989 and that SCS had not conformed with the modifications. No further information regarding the landfill closure was available.

In 1989, SCS was purchased from Mr. Fields by Mid-America Waste Systems of Canal Winchester, Ohio. During this transaction, SCS retained a 20-acre parcel of the site property located east of the landfill; the remaining acreage remained under Mr. Fields' ownership. SCS's current on-site hauling operations involve administrative and dispatching operations and use of the maintenance garage.

3.0 PREVIOUS INVESTIGATIONS

In 1984, OEPA conducted a preliminary assessment (PA) at the site. Based on the findings of this PA, the Ecology & Environment, Inc. (E&E), Field Investigation Team (FIT) performed a screening site inspection (SSI) at the JCL site on March 28, 1985 (E&E 1985; OEPA 1984b). No samples were collected during the SSI.

On November 26, 1985, OEPA collected a groundwater sample from a water supply well at the site to determine whether any contaminants from the landfill were present in SCS's drinking water. The Ohio Department of Health (ODH) analyzed the sample for purgeable aromatics (including styrene), acid and base/neutral extractables, and purgeable halocarbons as well as for conformance with ODH drinking water standards. The analysis revealed iron and manganese concentrations above secondary standards and hardness levels above desirable limits; however, no organic priority pollutant compounds were detected in the sample (OEPA 1986).

Documents obtained by PRC during the site file review indicate that in 1987, OEPA ordered Mr. Fields to comply with Executive Orders (EO) No. 3 and 6, which required submittal of a groundwater monitoring assessment plan and detailed plans for a leachate collection system, respectively. On behalf of Mr. Fields, Burgess & Niple, Ltd., of Columbus, Ohio, submitted plans that were rejected by OEPA (OEPA 1988).

The following information is based on interviews conducted by PRC during the site reconnaissance. In 1989, on behalf of Mr. Fields, SBA submitted a revised work plan to address EOs No. 3 and 6. Mr. Benson of SBA informed PRC that because OEPA did not respond to Mr. Fields' request for approval of the work plan, Mr. Fields did not implement the work plan. In 1990, at the request of OEPA, SBA conducted test pitting activities to delineate the boundaries of the waste on site. A total of 17 test pits were completed, but no samples were collected during the test pitting activities. Mr.

Benson informed PRC that only visual classifications of materials in the test pits were performed and recorded and that nothing of significance was noted regarding hazardous waste. No further information regarding test pitting activities was available.

4.0 SITE RECONNAISSANCE FINDINGS AND OBSERVATIONS

PRC conducted a site reconnaissance at the JCL site on January 19, 1995. Persons present at the site reconnaissance meeting were Scott Brockway and Keith Foszcz, PRC; Steve Benson, SBA, representing Mr. Fields, JCL owner; Mike Bush, Manager, SCS; and Linda Bondurant, Sales Service Representative, SCS.

The purpose of the site reconnaissance was to evaluate the need for immediate removal actions, determine appropriate health and safety requirements for potential on-site sampling activities, choose potential sampling locations, and locate and evaluate nearby targets. The information presented in this section is based primarily on PRC's interviews with site representatives and PRC's visual inspection of the site. Photographs taken during the site reconnaissance are provided in Appendix A; because photographs of similar site features have been combined in Appendix A, the photograph numbers in the appendix differ from those in PRC's field logbook notes (PRC 1995c).

During the site reconnaissance, PRC noted numerous leachate seeps on the east and west-northwest slopes of the landfill (see Photographs No. 1 through 6). An erosional channel runs along the east and north sides of the landfill, and in places the topsoil has been eroded to the bedrock surface (see Photographs No. 7 through 9). PRC also noted other erosional features on the landfill slopes (see Photographs No. 4, 10, and 11).

PRC observed exposed rubbish in erosional channels on the southeast slope of the landfill (see Photographs No. 11 and 12). Bubbles were noted in some leachate seep areas, apparently indicating methane or other gas seepage (see Photograph No. 13). Slight odors from leachate seeps were detected during the site reconnaissance. The original borrow area is presently used for junked vehicles, discarded equipment, and refuse (see Photographs No. 14 and 15). Although the north portion of the landfill cap appears to be intact, the south portion of the cap is exposed and lacks vegetation (see Photographs No. 16 and 17, respectively). PRC observed an engineered surface water

runoff pathway on the north portion of the landfill cap (see Photograph No. 18). The southeast slope of the landfill is vegetated and free of leachate seeps (see Photograph No. 19).

5.0 FSIP SAMPLING ACTIVITIES

Because no samples were collected during the SSI conducted in 1985, PRC collected surface soil and sediment samples during FSIP activities to characterize the JCL site. This section describes sampling locations and procedures and discusses the sample analytical results.

5.1 SAMPLING LOCATIONS AND PROCEDURES

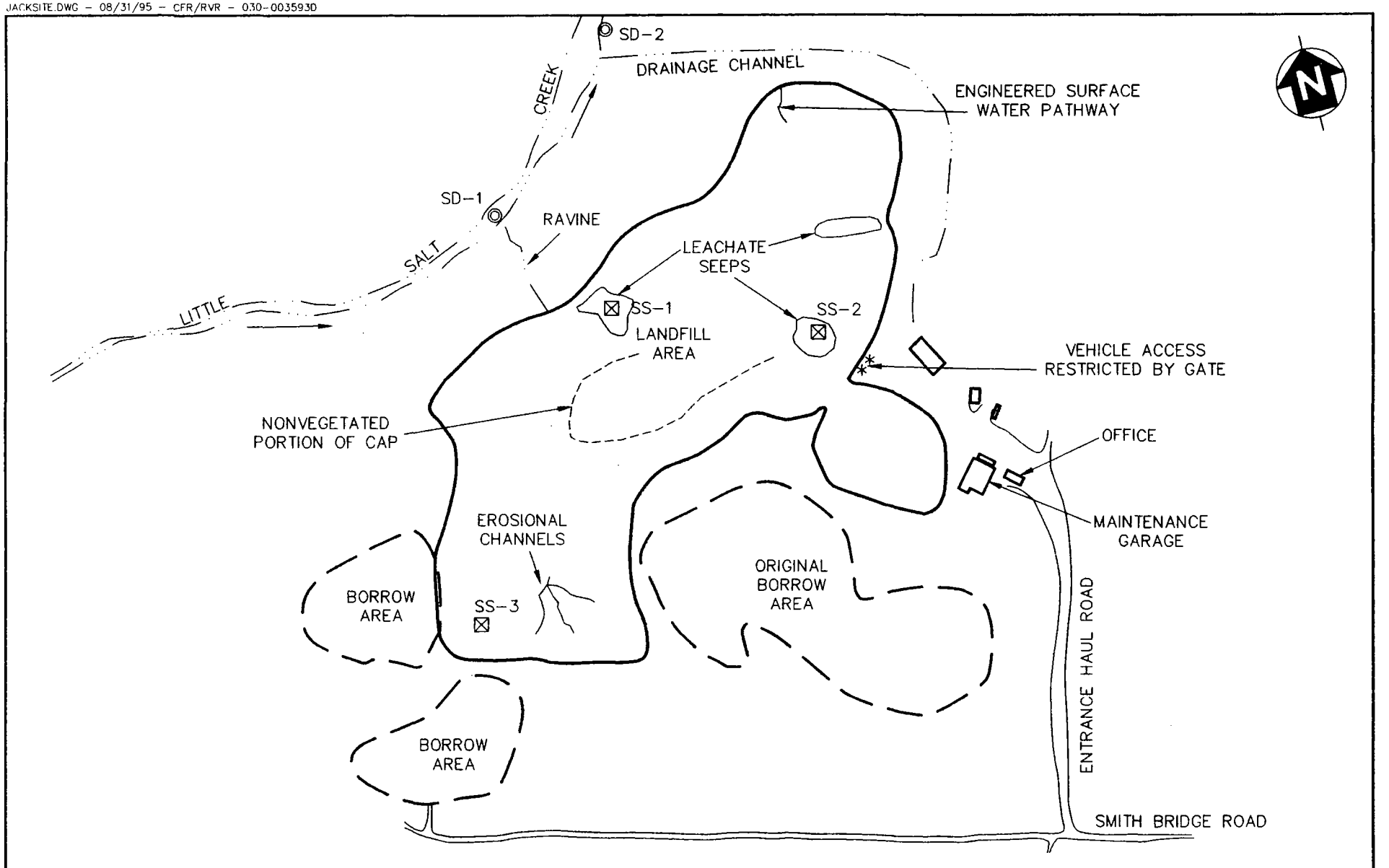
On June 9, 1995, PRC collected four surface soil samples (SS-1 through SS-4) and three sediment samples (SD-1 through SD-3) to better characterize the JCL site. On-site sampling locations are shown in Figure 3, and off-site sampling locations are shown in Figure 4. Photographs of sampling locations are presented in Appendix A (see Photographs No. 20 through 30).

Of the four soil samples, SS-1, SS-2, and SS-3 were collected on site, and SS-4 was collected off site as a background sample. PRC collected soil samples SS-1 through SS-3 near large leachate seeps identified during the site reconnaissance; PRC also collected a duplicate sample at location SS-1 for quality control purposes. PRC collected soil sample SS-4 in a wooded area about 0.25 mile east of the JCL site and about 100 feet south of Smith Bridge Road (PRC 1995d).

The three sediment samples were collected from Little Salt Creek, which flows along the west and south sides of the site. Of the three sediment samples, SD-1 and SD-2 were collected at points where contaminants from the landfill could enter Little Salt Creek, and SD-3 was collected upstream of the site as a background sample; PRC also collected a duplicate sample at location SD-2 for quality control purposes (PRC 1995d).

All soil and sediment samples were collected in accordance with PRC's EPA-approved generic quality assurance project plan and applicable portions of PRC's standard operating procedures (PRC 1991). PRC personnel used clean stainless steel bowls and trowels at each sampling location. All samples

JACKSITE.DWG – 08/31/95 – CFR/RVR – 030-0035930



LEGEND

⊠ SOIL SAMPLING LOCATION

◎ SEDIMENT SAMPLING LOCATION

175' 0 175' 350'

SCALE: 1" = 350'

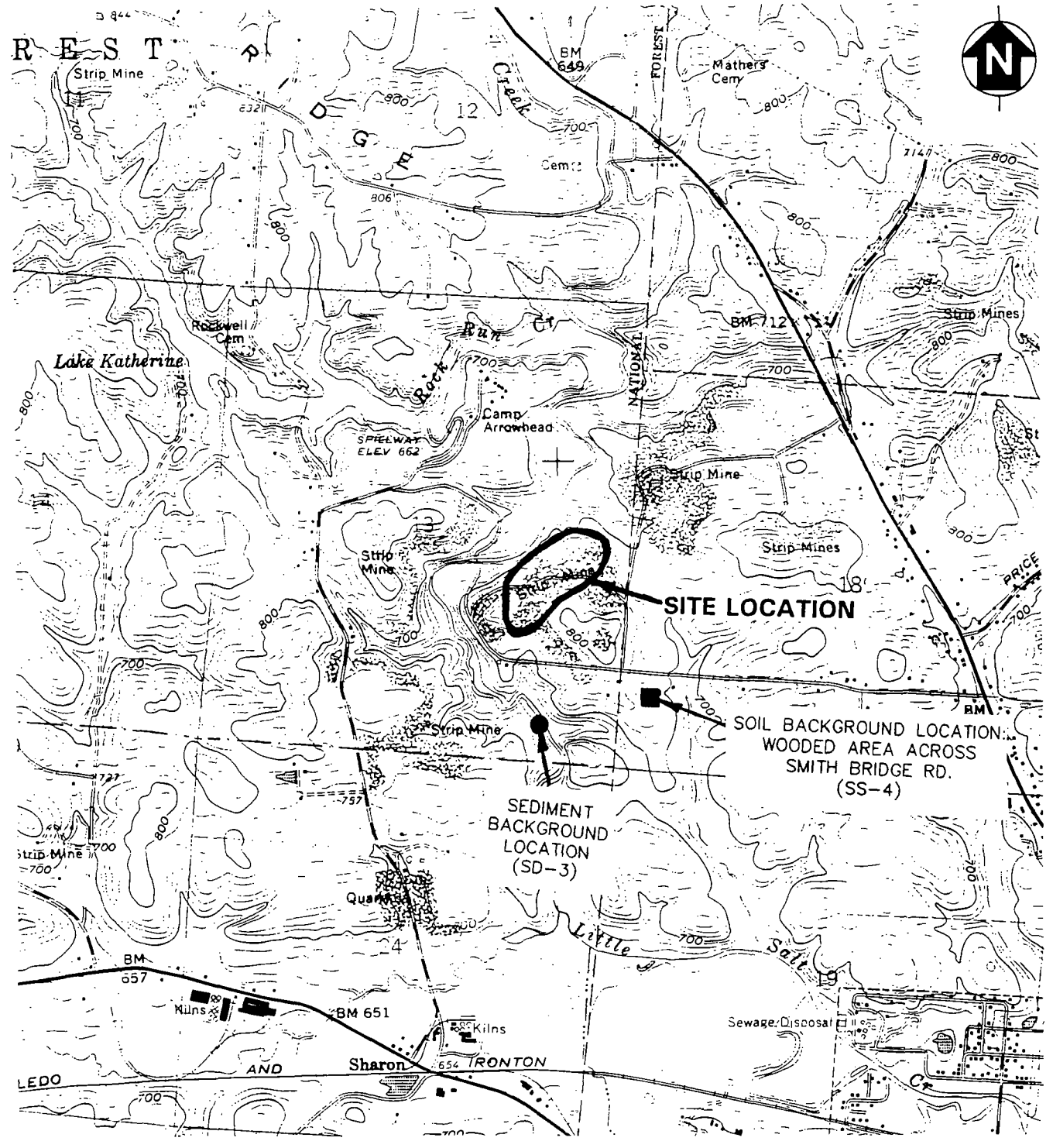
SOURCE: MODIFIED FROM BURGESS & NIPLE, LTD. 1987 AS REVISED BY SBA, 1991

JACKSON COUNTY LANDFILL
JACKSON COUNTY, OHIO

FIGURE 3

ON-SITE SAMPLING LOCATIONS

PRC ENVIRONMENTAL MANAGEMENT, INC.



SCALE 1:24000

1 1/2 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

SCALE 1"=2,000'

QUADRANGLE LOCATION

SOURCE: MODIFIED FROM USGS, JACKSON, OHIO, QUADRANGLE, 1975

JACKSON COUNTY LANDFILL
JACKSON COUNTY, OHIO

FIGURE 4

OFF-SITE SAMPLING LOCATIONS

PRC ENVIRONMENTAL MANAGEMENT, INC.

were preserved on ice immediately upon collection. The samples were shipped via overnight courier to Contract Laboratory Program (CLP) laboratories for June 10, 1995, delivery.

5.2 SAMPLE ANALYTICAL RESULTS

All the soil and sediment samples collected at the JCL site by PRC were analyzed for CLP target compound list (TCL) and target analyte list (TAL) parameters. Organic analytical results for the soil samples revealed elevated concentrations of volatile organic compounds (VOC), including acetone, ethylbenzene, and xylene (total), and elevated concentrations of semivolatile organic compounds (SVOC), including bis(2-ethylhexyl)phthalate. No elevated concentrations of pesticides or polychlorinated biphenyls (PCB) were detected in the soil samples (EPA 1995d). Analytical results for the soil samples revealed elevated concentrations of inorganic analytes, including barium, chromium, copper, mercury, and nickel (EPA 1995c). Organic analytical results for the sediment samples revealed no elevated VOC, SVOC, pesticide, or PCB concentrations (EPA 1995b). Inorganic analytical results for the sediment samples revealed elevated concentrations of several analytes, including aluminum, cobalt, manganese, nickel, and vanadium (EPA 1995a).

6.0 MIGRATION AND EXPOSURE PATHWAYS

This section describes the four migration and exposure pathways associated with the JCL site. Section 6.1 discusses the groundwater migration pathway; Section 6.2 discusses the surface water migration pathway; Section 6.3 discusses the soil exposure pathway; and Section 6.4 discusses the air migration pathway.

6.1 GROUNDWATER MIGRATION PATHWAY

This section discusses the geology and soils in the site area, releases to groundwater, and targets associated with the groundwater migration pathway at the site.

6.1.1 Geology and Soils

The JCL site lies in an unglaciated region of Ohio. Because the area has been extensively strip-mined, native soils have been removed. Soils that surround the site include Bethesda shaly clay loam, Rigley-Rock outcrop association soils, Rigley sandy loam, and Rarden-Wharton silt loam (USDA 1985). Subsurface geologic formations in this region generally consist of weathered, Pennsylvanian-age, shale and sandstone bedrock with intermittent coal beds. According to area well logs, the bedrock lies between 2 and 23 feet below ground surface (bgs) (ODNR 1995). Because Jackson County has been extensively strip-mined, sandstone bedrock outcrops are commonplace in the JCL area, with shale beds forming erosional slopes.

Geologic formations in Jackson County that yield groundwater include unconsolidated sand and gravel deposits and consolidated sandstone and shale. Static groundwater levels vary from 4 to 77 feet bgs (ODNR 1995).

The principal water-yielding, unconsolidated aquifer is located south of Jackson in a buried alluvial valley. In this formation, fine to coarse sand occurs at a depth of less than 50 feet bgs and can yield 25 to 50 gallons of water per minute. Unconsolidated deposits in narrow flood plains adjacent to creeks in the northwest portion of the basin have a potential water yield of 5 to 15 gallons per minute. The depth of completion for the wells in these areas ranges from 16 to 100 feet bgs (Walker 1985). However, less than 10 percent of the Little Salt Creek Basin is underlain by unconsolidated deposits having a potential water yield of more than 5 gallons per minute (USGS 1968).

Area well logs indicate that most private groundwater wells in the vicinity of the site are completed in the Pennsylvanian-age Black Hand sandstone (ODNR 1995). Although large quantities of water are stored in the consolidated sandstone and shale formations, water transmissivity is extremely slow. The water yield of wells drilled into these formations ranges from less than 1 to 10 gallons per minute; the average yield is about 2 gallons per minute (Walker 1985). The direction of regional groundwater flow in the area is to the southeast, corresponding to bedrock dip direction trends (USGS 1968).

6.1.2 Groundwater Releases

PRC found no documentation regarding observed releases to groundwater during its review of OEPA and EPA files. Analytical results for the groundwater sample collected by OEPA on November 26, 1985, from the on-site drinking water well indicated that no hazardous constituents were present at elevated concentrations (OEPA 1986).

6.1.3 Targets

The site is not located in a wellhead protection area. Most residences near the site rely on surface water intakes to provide their drinking water. Hammertown Lake is the primary source of drinking water for the area and is not connected to Little Salt Creek. The Jackson County Water Company (JCWC) is the administrative and maintenance entity for area water service. Representatives of JCWC informed PRC during the site reconnaissance that the residences along the south side of Smith Bridge Road were connected to JCWC's water service in August 1994. Jisco Lake, which is about 1 mile south of Jackson, is also used by JCWC as a secondary drinking water source (PRC 1995b).

Private well use in rural Jackson County is diminishing, and JCWC plans to extend water service to the remaining population in the county (PRC 1995b). Information on private groundwater well use within a 4-mile radius of the JCL site was obtained from a CENTRACTS report prepared by Frost Associates (Frost) of Essex, Connecticut. The CENTRACTS report indicates that the following resident populations use private wells within the indicated distance from the JCL site: 3 people within 0.25 mile, 19 people between 0.25 and 0.5 mile, 43 people between 0.5 and 1.0 mile, 166 people between 1 and 2 miles, 309 people between 2 and 3 miles, and 405 people between 3 and 4 miles (Frost 1995). All the private wells draw groundwater from the Black Hand sandstone (Walker 1985).

6.2 SURFACE WATER MIGRATION PATHWAY

This section discusses the migration route, surface water releases, and targets associated with the surface water migration pathway at the site.

6.2.1 Migration Route

The JCL site is located outside the 500-year flood plain of Little Salt Creek (FEMA 1985). The west boundary of the landfill at the site is about 300 feet east of Little Salt Creek. Based on its observations during the site reconnaissance and sampling visit, PRC estimated the flow rate of Little Salt Creek to be about 10 cubic feet per second (cfs) (PRC 1995c). The maximum 2-year, 24-hour rainfall for the area is about 2.75 inches (Huff and Angel 1992). Little Salt Creek flows north-northwest and empties into the Scioto River.

During the site reconnaissance, PRC noted a surface drainage channel on the east and north slopes of the landfill. In some areas, the drainage channel has been eroded to the top of the bedrock. The channel begins on the east slope, turns to the west, and runs along the north side of the landfill several hundred feet above the toe of the north slope. Reportedly, the channel empties into Little Salt Creek.

During capping activities in 1987, JCL constructed a surface water runoff pathway on the north portion of the landfill cap (see Photograph No. 18). The pathway, which is made of coarse stone, allows surface water on the landfill cap to drain down the landfill slope and flow into the drainage channel on the landfill's north slope. During the FSIP sampling visit, PRC observed a ravine on the landfill's west slope that runs from the landfill to Little Salt Creek.

6.2.2 Surface Water Releases

A release of nickel from the JCL site to Little Salt Creek has been documented based on analytical results. As stated in Section 5.2, soil and sediment samples collected during FSIP activities contained elevated concentrations of nickel (EPA 1995a and 1995c). Several leachate seeps have also been identified on the north and northwest slopes of the landfill, but they have not been observed flowing directly into Little Salt Creek (see Photographs No. 4, 5, 9, and 10).

6.2.3 Targets

No drinking water intakes have been identified within 15 miles downstream of the JCL site. No area reservoirs are connected to Little Salt Creek. Little Salt Creek is used for recreational purposes, including fishing. Fishery production in the creek is minimal; based on discussions with ODNR, PRC estimates that less than 100 pounds of fish from Little Salt Creek is consumed annually (PRC 1995a). No federally listed endangered or threatened species have been identified in Jackson County (USDI 1994). About 24 wetland environments were identified within 15 miles of the site. These wetlands are classified as palustrine, broad-leaved, deciduous areas. About 4 miles of wetlands fronts Little Salt Creek within 15 miles downstream of the site (USDI 1983a and 1983b).

6.3 SOIL EXPOSURE PATHWAY

As stated in Section 5.2, the following chemicals were detected at elevated concentrations in the on-site soil samples: acetone, ethylbenzene, xylene, bis(2-ethylhexyl)phthalate, barium, chromium, copper, mercury, and nickel (EPA 1995c and 1995d). No residences, schools, day-care facilities, or resources lie on or within 200 feet of areas of soil contamination at the site. Although 24 people are employed on site, access to the landfill area is partially restricted by a chain-link fence at the entrance to the closed landfill. The nearest residence is located about 1,000 feet south of the site along Smith Bridge Road. The population within a 1-mile radius of the site is 1,167 people (Frost 1995). Site access is partially restricted by a chain-link fence and gate at the south entrance to the site. However, most of the landfill is easily accessible.

6.4 AIR MIGRATION PATHWAY

Minor odors from leachate seeps were noted during the site reconnaissance on January 19, 1995, but no airborne particulates were observed. In 1987, capping activities were completed at the site; the landfill was covered with 2 feet of compacted clay and seeded. Currently, vegetation covers much of the ground surface at the site. About 10,640 people live within 4 miles of the site (Frost 1995). Many wetland environments greater than 1 acre in size lie within 4 miles of the site (USDI 1983b).

7.0 SUMMARY

The site is a closed municipal landfill that occupies about 40 acres in a rural area. About 22.5 acres of the site was used for landfilling. The site was closed in 1987, when it was covered with 2 feet of compacted clay and seeded. FIT conducted an SSI at the site in March 1985. No samples were collected during this SSI.

Soil samples collected during FSIP activities indicate that the following chemicals are present at elevated concentrations in on-site soils: acetone, ethylbenzene, xylene, bis(2-ethylhexyl)phthalate, barium, chromium, copper, mercury, and nickel. Sediment samples collected during FSIP activities indicate that a release of nickel from the site to the surface water migration pathway has occurred.

About 945 people living within 4 miles of the site are served by residential wells that draw water from the Black Hand sandstone aquifer. The site is underlain by Pennsylvanian-age shale and sandstone bedrock. No municipal groundwater wells are located within 4 miles of the site, and no surface water intakes have been identified within 15 miles downstream of the site. About 4 miles of wetland frontage has been identified along Little Salt Creek within 15 miles of the site. Little Salt Creek is used for recreational purposes, including fishing.

No residences, schools, day-care facilities, or resources lie within 200 feet of areas of potential contamination at the site. A total of 24 people are employed on site. About 10,640 people live within 4 miles of the site.

REFERENCES

Ecology and Environment, Inc. (E&E). 1985. U.S. Environmental Protection Agency (EPA) Form 2070-13 (7-81). March 28.

Federal Emergency Management Agency (FEMA). 1985. Flood Insurance Rate Map for Jackson County, Ohio, Unincorporated Areas. Community Panel No. 390290 0060 B. August 19.

Frost Associates (Frost). 1995. CENTRACTS Report for Jackson County Landfill Site. February 17.

Goodyear Tire & Rubber Company (Goodyear). 1984. Letter Regarding Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Status. From F.C. Betzhold, Manager, Chemical and Environmental Protection. To Ben L. Pfefferle, Attorney, Ohio Environmental Protection Agency (OEPA). June 4.

Huff, Floyd A., and James R. Angel. 1992. *Rainfall Frequency Atlas of the Midwest*. Illinois State Water Survey. Champaign, Illinois. Bulletin 71.

Ohio Department of Natural Resources (ODNR). 1995. Area Well Logs.

Ohio Environmental Protection Agency (OEPA). 1977. Solid Waste Disposal Questionnaire. November 17.

OEPA. 1984a. Letter Regarding CERCLA Status. From Ben L. Pfefferle, Attorney. To F.C. Betzhold, Manager, Chemical and Environmental Protection, Goodyear Tire & Rubber Company. May 4.

OEPA. 1984b. Preliminary Assessment Review Memorandum with Attached EPA Form 2070-12 (7-81). From Marilyn McCoy-Zumbro, Southeast District Office Inspector. To Stephen L. Hamlin, P.E., Unit Supervisor, Division of Solid & Hazardous Waste Management. August 1.

OEPA. 1986. Letter Regarding Water Sample Analysis. From Michael J. Starkey, Environmental Scientist. To J. Gregory Fields. March 10.

OEPA. 1988. Letter Regarding Proposal to Conform with Executive Orders No. 3 and 6. From Richard L. Shank, Ph.D., Director. To John A. Noyes, Attorney, Burgess & Niple, Ltd. January 20.

PRC Environmental Management, Inc. (PRC). 1991. Quality Assurance Project Plan for Region 5 Superfund Site Assessments for Ohio. July.

PRC. 1995a. Record of Telephone Conversation Regarding Fishery Status of Little Salt Creek. Between Scott J. Brockway and Mike Greenlee, Ohio Department of Natural Resources (ODNR) Division of Wildlife, District 4. January 17.

PRC. 1995b. Record of Telephone Conversation Regarding Jackson Municipal Water Supply. Between Scott J. Brockway and Tami Norman, Jackson County Water Department. January 17.

PRC. 1995c. Field Logbook Notes Taken During Site Reconnaissance at Jackson County Landfill Site. Prepared by Scott J. Brockway. January 19.

PRC. 1995d. Field Logbook Notes Taken During Sampling Event at Jackson County Landfill Site. Prepared by Scott J. Brockway. June 9.

SBA Consultants, Inc. (SBA). 1991. Drawing of Jackson County Landfill. Revised from Original Drawing by Burgess & Niple, Ltd.

U.S. Department of Agriculture (USDA). 1985. *Soil Survey of Jackson County, Ohio.* April.

U.S. Department of the Interior (USDI). 1983a. National Wetlands Inventory Map of Jackson, Ohio. Fish and Wildlife Service. September 19.

USDI. 1983b. National Wetlands Inventory Map of Byer, Ohio. Fish and Wildlife Service. October 5.

USDI. 1994. Federally Listed Endangered, Threatened, and Proposed Species; Ohio. Fish and Wildlife Service. April 1.

U.S. Environmental Protection Agency (EPA). 1995a. Laboratory Analytical Result Package for Jackson County Landfill. Samples No. MEABH6 through MEABH9. From Dennis Wesolowski, Chief, Contract Analytical Services Section (CASS). Reviewed on June 23.

EPA. 1995b. Laboratory Analytical Result Package for Jackson County Landfill. Samples No. EAMS6 through EAMS9. From Dennis Wesolowski, Chief, CASS. Reviewed on June 26.

EPA. 1995c. Laboratory Analytical Result Package for Jackson County Landfill. Samples No. MEABH1 through MEABH5. From Dennis Wesolowski, Chief, CASS. Reviewed on June 27.

EPA. 1995d. Laboratory Analytical Result Package for Jackson County Landfill. Samples No. EAMS1 through EAMS5. From Dennis Wesolowski, Chief, CASS. Reviewed on July 14.

U.S. Geological Survey (USGS). 1968. "Groundwater Hydrology and Geology of the Lower Great Miami River Valley, Ohio." Geological Survey Professional Paper 605-A.

USGS. 1975. 7.5-Minute Series Topographic Map of Jackson, Ohio, Quadrangle.

Walker, Alfred C. 1985. "Ground-Water Resources of Jackson and Vinton Counties." ODNR. Columbus, Ohio.

APPENDIX A

SITE RECONNAISSANCE AND SAMPLING VISIT PHOTOGRAPHS

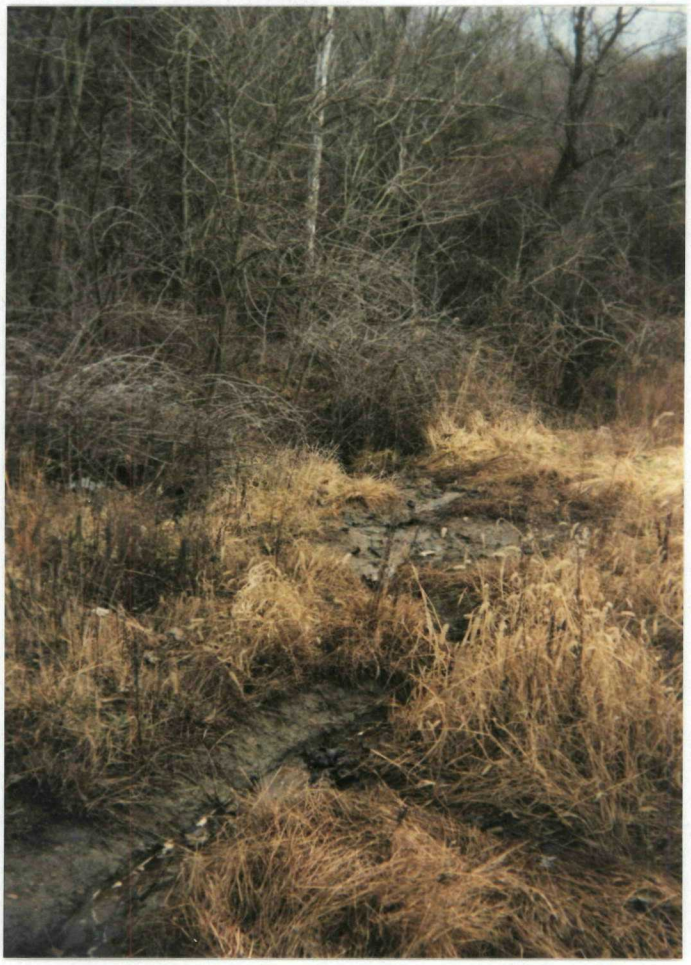
JACKSON COUNTY LANDFILL
JACKSON, OHIO

(20 Pages)

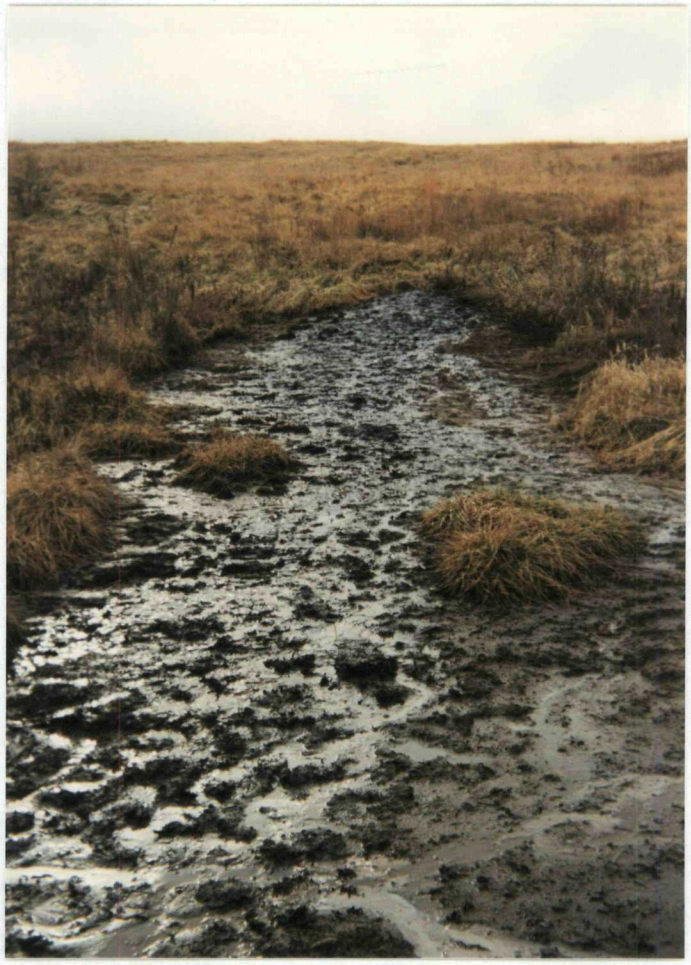
Photograph No. 1 Location: Jackson County Landfill (JCL)
Orientation: West Date: 01/19/95
Description: This photograph shows a leachate seep on the east slope of the landfill. Note the dead vegetation in the seep area.

Photograph No. 2 Location: JCL
Orientation: Downward Date: 01/19/95
Description: An oily sheen was observed on the landfill's north slope.

Photograph No. 3 Location: JCL
Orientation: Downward Date: 01/19/95
Description: This photograph shows an oily sheen produced by a leachate seep.



Photograph No. 4 Location: JCL
Orientation: North Date: 01/19/95
Description: This photograph shows an erosional channel created by a leachate seep on the north slope of the landfill.



Photograph No. 5 Location: JCL
Orientation: Southeast Date: 01/19/95
Description: Test pitting activities caused this large leachate seep to form on the northwest slope of the landfill.

Photograph No. 6 Location: JCL
Orientation: Downward Date: 01/19/95
Description: This photograph shows the surface of the leachate seep pictured in Photograph No. 5.

Photograph No. 7 Location: JCL
Orientation: North Date: 01/19/95
Description: This photograph shows the drainage channel on the east slope of the landfill.

Photograph No. 8 Location: JCL
Orientation: South Date: 01/19/95
Description: The drainage channel shown in Photograph No. 7 exposes bedrock further downstream. Note the rip-rap on the left side of the channel.

Photograph No. 9 Location: JCL
Orientation: Downward Date: 01/19/95
Description: The drainage channel shown in Photograph No. 7 also exposes bedrock on the north slope of the landfill.

Photograph No. 10 Location: JCL
Orientation: East Date: 01/19/95
Description: Erosional channels dissect the landfill's north slope.

Photograph No. 11 Location: JCL
Orientation: Southeast Date: 01/19/95
Description: This photograph shows a portion of the southeast slope of the landfill. Note the rubbish exposed by an erosional channel.

Photograph No. 12 Location: JCL
Orientation: West Date: 01/19/95
Description: This photograph shows more rubbish exposed by an erosional channel on the landfill.

Photograph No. 13 Location: JCL
Orientation: Downward Date: 01/19/95
Description: Note the bubbles on the leachate seep to the right of the tire.

Photograph No. 14 Location: JCL
Orientation: South Date: 01/19/95
Description: Junked vehicles are stored in an area south of the landfill cap.

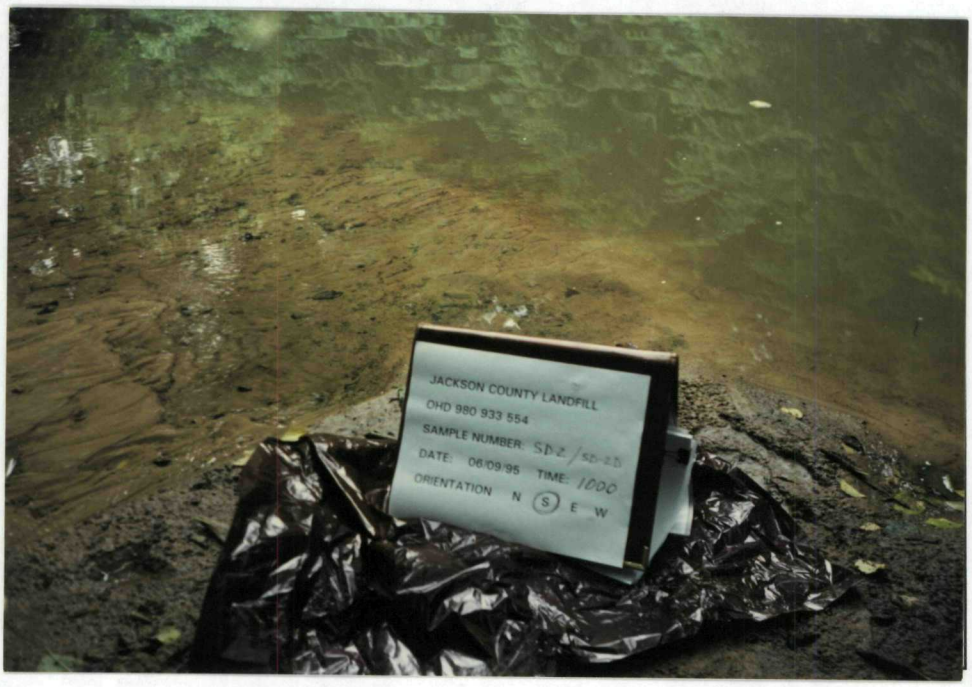
Photograph No. 15 Location: JCL
Orientation: Southeast Date: 01/19/95
Description: This area is located west of the erosional channel shown in Photograph No. 7. During the site reconnaissance, refuse was observed in this area, which was originally a borrow area.

Photograph No. 16 Location: JCL
Orientation: Northeast Date: 01/19/95
Description: This photograph shows the north portion of the landfill cap.

Photograph No. 17 Location: JCL
Orientation: North Date: 01/19/95
Description: This photograph shows the south portion of the landfill cap. Note the shaly, nonvegetated cover.

Photograph No. 18 Location: JCL
Orientation: Northwest Date: 01/19/95
Description: An engineered drainage channel is present on the north portion of the landfill cap.

Photograph No. 19 Location: JCL
Orientation: Northwest Date: 01/19/95
Description: This photograph shows the southeast slope of the landfill.



Photograph No. 20 Location: JCL
Orientation: Downward Date: 06/09/95
Description: This photograph shows sampling locations SD-2 and SD-2D.

Photograph No. 21 Location: JCL
Orientation: West Date: 06/09/95
Description: This photograph shows sampling locations SD-2 and SD-2D.

Photograph No. 22 Location: JCL
Orientation: Northeast Date: 06/09/95
Description: This photograph shows sampling location SD-1.

Photograph No. 23 Location: JCL
Orientation: Northeast Date: 06/09/95
Description: This photograph shows sampling location SD-1.

Photograph No. 24 Location: JCL
Orientation: Downward Date: 06/09/95
Description: This photograph shows sampling locations SS-1 and SS-1D.

Photograph No. 25 Location: JCL
Orientation: West Date: 06/09/95
Description: This photograph shows sampling locations SS-1 and SS-1D.

Photograph No. 26 Location: JCL
Orientation: Downward Date: 06/09/95
Description: This photograph shows sampling location SS-2.

Photograph No. 27 Location: JCL
Orientation: North Date: 06/09/95
Description: This photograph shows sampling location SS-2.

Photograph No. 28 Location: JCL
Orientation: Downward Date: 06/09/95
Description: This photograph shows sampling location SD-3.

Photograph No. 29 Location: JCL
Orientation: North Date: 06/09/95
Description: This photograph shows sampling location SS-3.

Photograph No. 30 Location: JCL
Orientation: Downward Date: 06/09/95
Description: This photograph shows sampling location SS-4.

APPENDIX B

SUMMARY OF SAMPLE ANALYTICAL RESULTS

JACKSON COUNTY LANDFILL
JACKSON, OHIO

(24 Pages)

TABLE B-1

SUMMARY OF SOIL SAMPLE ANALYTICAL RESULTS (ORGANIC)*

Sampling Location		SS-1	SS-1D	SS-2	SS-3	SS-4 (Background)
Date Sampled		6/9/95	6/9/95	6/9/95	6/9/95	6/9/95
Time Sampled		1130	1130	1200	1315	1345
Organic Traffic Report No. Inorganic Traffic Report No.		EAMS1 MEABH1	EAMS2 MEABH2	EAMS3 MEABH3	EAMS4 MEABH4	EAMS5 MEABH5
Sample Type		Environmental	Duplicate (SS-1)	Environmental	Environmental	Environmental
VOLATILE ORGANIC COMPOUNDS	CRQL					
Chloromethane	10	ND	ND	ND	ND	ND
Bromomethane	10	ND	ND	ND	ND	ND
Vinyl Chloride	10	ND	ND	ND	ND	ND
Chloroethane	10	ND	ND	ND	ND	ND
Methylene Chloride	10	ND	ND	ND	ND	ND
Acetone	10	ND	180	ND	ND	ND
Carbon Disulfide	10	ND	ND	ND	ND	ND
1,1-Dichloroethene	10	ND	ND	ND	ND	ND
1,1-Dichloroethane	10	ND	ND	ND	ND	ND
1,2-Dichloroethene (Total)	10	ND	ND	ND	ND	ND
Chloroform	10	ND	ND	ND	ND	ND
1,2-Dichloroethane	10	ND	ND	ND	ND	ND
2-Butanone	10	ND	ND	ND	3 J	ND
1,1,1-Trichloroethane	10	ND	ND	ND	ND	ND
Carbon Tetrachloride	10	ND	ND	ND	ND	ND

TABLE B-1

SUMMARY OF SOIL SAMPLE ANALYTICAL RESULTS (ORGANIC) (Continued)

Sampling Location		SS-1	SS-1D	SS-2	SS-3	SS-4 (Background)
Date Sampled		6/9/95	6/9/95	6/9/95	6/9/95	6/9/95
Time Sampled		1130	1130	1200	1315	1345
Organic Traffic Report No. Inorganic Traffic Report No.		EAMS1 MEABH1	EAMS2 MEABH2	EAMS3 MEABH3	EAMS4 MEABH4	EAMS5 MEABH5
Sample Type		Environmental	Duplicate (SS-1)	Environmental	Environmental	Environmental
VOLATILE ORGANIC COMPOUNDS (Continued)	CRQL					
Bromodichloromethane	10	ND	ND	ND	ND	ND
1,2-Dichloropropane	10	ND	ND	ND	ND	ND
Trichloroethene	10	ND	ND	ND	ND	ND
Dibromochloromethane	10	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	10	ND	ND	ND	ND	ND
Benzene	10	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene	10	ND	ND	ND	ND	ND
Bromoform	10	ND	ND	ND	ND	ND
4-Methyl-2-pentanone	10	ND	ND	ND	ND	ND
2-Hexanone	10	ND	ND	ND	ND	ND
Tetrachloroethene	10	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	10	ND	ND	ND	ND	ND
Toluene	10	ND	ND	ND	ND	ND
Chlorobenzene	10	ND	ND	ND	ND	ND
Ethylbenzene	10	59	40	1 J	ND	ND

TABLE B-1

SUMMARY OF SOIL SAMPLE ANALYTICAL RESULTS (ORGANIC) (Continued)

Sampling Location		SS-1	SS-1D	SS-2	SS-3	SS-4 (Background)
Date Sampled		6/9/95	6/9/95	6/9/95	6/9/95	6/9/95
Time Sampled		1130	1130	1200	1315	1345
Organic Traffic Report No. Inorganic Traffic Report No.		EAMS1 MEABH1	EAMS2 MEABH2	EAMS3 MEABH3	EAMS4 MEABH4	EAMS5 MEABH5
Sample Type		Environmental	Duplicate (SS-1)	Environmental	Environmental	Environmental
VOLATILE ORGANIC COMPOUNDS (Continued)	CRQL					
Styrene	10	ND	ND	ND	ND	ND
Xylene (Total)	10	25	15 J	ND	ND	ND
Tentatively Identified Compounds (Total)	10	10	411	41	8	ND
SEMIVOLATILE ORGANIC COMPOUNDS						
Phenol	330	ND	ND	ND	ND	ND
bis(2-Chloroethyl)ether	330	ND	ND	ND	ND	ND
2-Chlorophenol	330	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	330	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	330	92 J	130J	ND	ND	ND
1,2-Dichlorobenzene	330	ND	ND	ND	ND	ND
2-Methylphenol	330	ND	ND	ND	ND	ND
2,2'-oxybis (1-Chloropropane)	330	ND	ND	ND	ND	ND
4-Methylphenol	330	ND	ND	ND	ND	ND
N-Nitroso-di-n-propylamine	330	ND	ND	ND	ND	ND
Hexachloroethane	330	ND	ND	ND	ND	ND

TABLE B-1

SUMMARY OF SOIL SAMPLE ANALYTICAL RESULTS (ORGANIC) (Continued)

Sampling Location		SS-1	SS-1D	SS-2	SS-3	SS-4 (Background)
Date Sampled		6/9/95	6/9/95	6/9/95	6/9/95	6/9/95
Time Sampled		1130	1130	1200	1315	1345
Organic Traffic Report No. Inorganic Traffic Report No.		EAMS1 MEABH1	EAMS2 MEABH2	EAMS3 MEABH3	EAMS4 MEABH4	EAMS5 MEABH5
Sample Type		Environmental	Duplicate (SS-1)	Environmental	Environmental	Environmental
SEMIVOLATILE ORGANIC COMPOUNDS (Continued)	CRQL					
Nitrobenzene	330	ND	ND	ND	ND	ND
Isophorone	330	ND	ND	ND	ND	ND
2-Nitrophenol	330	ND	ND	ND	ND	ND
2,4-Dimethylphenol	330	ND	ND	ND	ND	ND
bis(2-Chloroethoxy)methane	330	ND	ND	ND	ND	ND
2,4-Dichlorophenol	330	ND	ND	ND	ND	ND
1,2,4-Trichlorobenzene	330	ND	ND	ND	ND	ND
Naphthalene	330	50 J	80 J	69 J	62 J	ND
4-Chloroaniline	330	ND	ND	ND	ND	ND
Hexachlorobutadiene	330	ND	ND	ND	ND	ND
4-Chloro-3-methylphenol	330	ND	ND	ND	ND	ND
2-Methylnaphthalene	330	ND	ND	ND	ND	ND
Hexachlorocyclopentadiene	330	ND	ND	ND	ND	ND
2,4,6-Trichlorophenol	330	ND	ND	ND	ND	ND
2,4,5-Trichlorophenol	830	ND	ND	ND	ND	ND

TABLE B-1

SUMMARY OF SOIL SAMPLE ANALYTICAL RESULTS (ORGANIC) (Continued)

Sampling Location		SS-1	SS-1D	SS-2	SS-3	SS-4 (Background)
Date Sampled		6/9/95	6/9/95	6/9/95	6/9/95	6/9/95
Time Sampled		1130	1130	1200	1315	1345
Organic Traffic Report No. Inorganic Traffic Report No.		EAMS1 MEABH1	EAMS2 MEABH2	EAMS3 MEABH3	EAMS4 MEABH4	EAMS5 MEABH5
Sample Type		Environmental	Duplicate (SS-1)	Environmental	Environmental	Environmental
SEMIVOLATILE ORGANIC COMPOUNDS (Continued)	CRQL					
2-Chloronaphthalene	330	ND	ND	ND	ND	ND
2-Nitroaniline	830	ND	ND	ND	ND	ND
Dimethylphthalate	330	ND	ND	ND	ND	ND
Acenaphthylene	330	ND	ND	ND	ND	ND
2,6-Dinitrotoluene	330	ND	ND	ND	ND	ND
3-Nitroaniline	830	ND	ND	ND	ND	ND
Acenaphthene	330	ND	ND	ND	ND	ND
2,4-Dinitrophenol	830	ND	ND	ND	ND	ND
4-Nitrophenol	830	ND	ND	ND	ND	ND
Dibenzofuran	330	ND	ND	ND	ND	ND
2,4-Dinitrotoluene	330	ND	ND	ND	ND	ND
Diethylphthalate	330	ND	ND	ND	ND	ND
4-Chlorophenyl-phenylether	330	ND	ND	ND	ND	ND
Fluorene	330	ND	ND	ND	ND	ND
4-Nitroaniline	830	ND	ND	ND	ND	ND

TABLE B-1

SUMMARY OF SOIL SAMPLE ANALYTICAL RESULTS (ORGANIC) (Continued)

Sampling Location		SS-1	SS-1D	SS-2	SS-3	SS-4 (Background)
Date Sampled		6/9/95	6/9/95	6/9/95	6/9/95	6/9/95
Time Sampled		1130	1130	1200	1315	1345
Organic Traffic Report No. Inorganic Traffic Report No.		EAMS1 MEABH1	EAMS2 MEABH2	EAMS3 MEABH3	EAMS4 MEABH4	EAMS5 MEABH5
Sample Type		Environmental	Duplicate (SS-1)	Environmental	Environmental	Environmental
SEMIVOLATILE ORGANIC COMPOUNDS (Continued)	CRQL					
4,6-Dinitro-2-methylphenol	830	ND	ND	ND	ND	ND
N-Nitrosodiphenylamine (1)	330	ND	ND	ND	ND	ND
4-Bromophenyl-phenylether	330	ND	ND	ND	ND	ND
Hexachlorobenzene	330	ND	ND	ND	ND	ND
Pentachlorophenol	830	ND	ND	ND	ND	ND
Phenanthrene	330	ND	ND	53 J	ND	ND
Anthracene	330	ND	ND	ND	ND	ND
Carbazole	330	ND	ND	ND	ND	ND
Di-n-butylphthalate	330	ND	ND	ND	ND	ND
Fluoranthene	330	ND	ND	ND	ND	ND
Pyrene	330	ND	ND	ND	ND	ND
Butylbenzylphthalate	330	ND	ND	ND	ND	ND
3,3'-Dichlorobenzidine	330	ND	ND	ND	ND	ND
Benzo(a)anthracene	330	ND	ND	ND	ND	ND
Chrysene	330	ND	ND	ND	ND	ND

TABLE B-1

SUMMARY OF SOIL SAMPLE ANALYTICAL RESULTS (ORGANIC) (Continued)

Sampling Location		SS-1	SS-1D	SS-2	SS-3	SS-4 (Background)
Date Sampled		6/9/95	6/9/95	6/9/95	6/9/95	6/9/95
Time Sampled		1130	1130	1200	1315	1345
Organic Traffic Report No. Inorganic Traffic Report No.		EAMS1 MEABH1	EAMS2 MEABH2	EAMS3 MEABH3	EAMS4 MEABH4	EAMS5 MEABH5
Sample Type		Environmental	Duplicate (SS-1)	Environmental	Environmental	Environmental
SEMIVOLATILE ORGANIC COMPOUNDS (Continued)	CRQL					
bis(2-Ethylhexyl)phthalate	330	610	830	ND	64 J	ND
Di-n-octyl Phthalate	330	ND	ND	ND	ND	ND
Benzo(b)fluoranthene	330	ND	ND	ND	ND	ND
Benzo(k)fluoranthene	330	ND	ND	ND	ND	ND
Benzo(a)pyrene	330	ND	ND	ND	ND	ND
Indeno(1,2,3-cd)pyrene	330	ND	ND	ND	ND	ND
Dibenzo(a,h)anthracene	330	ND	ND	ND	ND	ND
Benzo(g,h,i)perylene	330	ND	ND	ND	ND	ND
Tentatively Identified Compounds (Total)		8,633	18,224	4,927	3,251	7,197
PESTICIDES/PCB COMPOUNDS						
alpha-BHC	1.7	ND	ND	ND	ND	ND
beta-BHC	1.7	ND	ND	ND	ND	ND
delta-BHC	1.7	0.18 JP	0.99 JP	ND	ND	0.15 JP
gamma-BHC (Lindane)	1.7	ND	ND	ND	ND	ND
Heptachlor	1.7	ND	ND	ND	ND	ND

TABLE B-1

SUMMARY OF SOIL SAMPLE ANALYTICAL RESULTS (ORGANIC) (Continued)

Sampling Location		SS-1	SS-1D	SS-2	SS-3	SS-4 (Background)
Date Sampled		6/9/95	6/9/95	6/9/95	6/9/95	6/9/95
Time Sampled		1130	1130	1200	1315	1345
Organic Traffic Report No. Inorganic Traffic Report No.		EAMS1 MEABH1	EAMS2 MEABH2	EAMS3 MEABH3	EAMS4 MEABH4	EAMS5 MEABH5
Sample Type		Environmental	Duplicate (SS-1)	Environmental	Environmental	Environmental
PESTICIDES/PCB COMPOUNDS (Continued)	CRQL					
Aldrin	1.7	0.32 JP	ND	0.20 JP	ND	ND
Heptachlor Epoxide	1.7	ND	0.22 JP	ND	ND	ND
Endosulfan I	1.7	ND	ND	ND	ND	ND
Dieldrin	3.3	ND	ND	ND	ND	ND
4,4'-DDE	3.3	ND	0.58 JP	ND	ND	0.32 JP
Endrin	3.3	ND	0.30 JP	ND	ND	ND
Endosulfan II	3.3	ND	ND	ND	ND	ND
4,4'-DDD	3.3	ND	ND	0.49 J	0.33 JP	ND
Endosulfan Sulfate	3.3	ND	ND	ND	ND	ND
4,4'-DDT	3.3	ND	ND	ND	ND	ND
Methoxychlor	17	ND	ND	ND	ND	ND
Endrin Ketone	3.3	ND	ND	ND	ND	ND
Endrin Aldehyde	3.3	ND	ND	ND	ND	ND
alpha-Chlordane	1.7	0.45 J	2.0 J	ND	ND	ND
gamma-Chlordane	1.7	ND	1.1 JP	ND	ND	ND

TABLE B-1

SUMMARY OF SOIL SAMPLE ANALYTICAL RESULTS (ORGANIC) (Continued)

Sampling Location		SS-1	SS-1D	SS-2	SS-3	SS-4 (Background)
Date Sampled		6/9/95	6/9/95	6/9/95	6/9/95	6/9/95
Time Sampled		1130	1130	1200	1315	1345
Organic Traffic Report No. Inorganic Traffic Report No.		EAMS1 MEABH1	EAMS2 MEABH2	EAMS3 MEABH3	EAMS4 MEABH4	EAMS5 MEABH5
Sample Type		Environmental	Duplicate (SS-1)	Environmental	Environmental	Environmental
PESTICIDES/PCB COMPOUNDS (Continued)	CRQL					
Toxaphene	170	ND	ND	ND	ND	ND
Aroclor-1016	33	ND	ND	ND	ND	ND
Aroclor-1221	67	ND	ND	ND	ND	ND
Aroclor-1232	33	ND	ND	ND	ND	ND
Aroclor-1242	33	ND	ND	ND	ND	ND
Aroclor-1248	33	ND	ND	ND	ND	ND
Aroclor-1254	33	ND	ND	ND	ND	ND
Aroclor-1260	33	ND	ND	ND	ND	ND

Notes:

* All concentrations are in micrograms per kilogram (μg/kg).

CRQL Contract-required quantitation limit

ND Not detected

J This indicates an estimated value. This flag is used either when a concentration is estimated for a tentatively identified compound or when the data indicates the presence of a compound but the result is less than the sample quantitation limit and greater than zero. The flag is also used to indicate a reported result having an associated quality control (QC) problem.

TABLE B-1

SUMMARY OF SOIL SAMPLE ANALYTICAL RESULTS (ORGANIC) (Continued)

Notes (Continued):

P This indicates a pesticide or Aroclor target analyte when there is a greater than 25 percent difference in the detected concentrations in the two gas chromatograph (GC) columns. The lower of the two results is reported.

PCB Polychlorinated biphenyl

TABLE B-2

SUMMARY OF SOIL SAMPLE ANALYTICAL RESULTS (INORGANIC)*

Sampling Location		SS-1	SS-1D	SS-2	SS-3	SS-4 (Background)
Date Sampled		6/9/95	6/9/95	6/9/95	6/9/95	6/9/95
Time Sampled		1130	1130	1200	1315	1345
Inorganic Traffic Report No. Organic Traffic Report No.		MEABH1 EAMS1	MEABH2 EAMS2	MEABH3 EAMS3	MEABH4 EAMS4	MEABH5 EAMS5
Sample Type		Environmental	Duplicate (SS-1)	Environmental	Environmental	Environmental
INORGANIC ANALYTES	CRDL					
Aluminum	40	4,530 J	6,560 J	7,610 J	4,880 J	5,980 J
Antimony	12	ND	ND	ND	ND	ND
Arsenic	2	2.7	2.1	4.6	6.6	3.6
Barium	40	141	49.0	38.6	1,160	58.0
Beryllium	1	0.58	0.93	1.0	0.67	0.55
Cadmium	1	0.32	ND	ND	0.81	ND
Calcium	1,000	14,000 J	6,420 J	2,140 J	16,000 J	717 J
Chromium	2	8.1	12.4	14.2	19.5	6.4
Cobalt	10	5.9	7.9	14.1	9.3	8.2
Copper	5	4.6	15.7	11.5	10.0	4.1
Iron	20	47,400 J	28,200 J	16,500 J	109,000 J	8,880 J
Lead	0.6	7.9	11.0	9.6	10.8	17.9
Magnesium	1,000	2,080	2,310	1,550	2,760	600
Manganese	3	400	297	420	346	809
Mercury	0.1	ND	ND	ND	1.2	ND

TABLE B-2

SUMMARY OF SOIL SAMPLE ANALYTICAL RESULTS (INORGANIC) (Continued)

Sampling Location		SS-1	SS-1D	SS-2	SS-3	SS-4 (Background)
Date Sampled		6/9/95	6/9/95	6/9/95	6/9/95	6/9/95
Time Sampled		1130	1130	1200	1315	1345
Inorganic Traffic Report No. Organic Traffic Report No.		MEABH1 EAMS1	MEABH2 EAMS2	MEABH3 EAMS3	MEABH4 EAMS4	MEABH5 EAMS5
Sample Type		Environmental	Duplicate (SS-1)	Environmental	Environmental	Environmental
INORGANIC ANALYTES (Continued)	CRDL					
Nickel	8	9.7	17.7	23.6	22.8	7.6
Potassium	1,000	1,720	1,940	1,780	2,730	582
Selenium	1	ND	ND	ND	ND	ND
Silver	2	ND	ND	ND	ND	ND
Sodium	1,000	1,460	1,140	362	2,140	ND
Thallium	2	1.2	ND	ND	1.8	0.70
Vanadium	10	9.2	11.8	14.9	14.1	12.0
Zinc	4	56.7	57.8	41.0	41.6	27.9
Cyanide	2	ND	ND	ND	ND	ND

Notes:

* All concentrations are in milligrams per kilogram (mg/kg).

CRDL Contract-required detection limit

ND Not detected

J This indicates that the associated value is an estimated quantity.

TABLE B-3

SUMMARY OF SEDIMENT SAMPLE ANALYTICAL RESULTS (ORGANIC)*

Sampling Location		SD-1	SD-2	SD-2D	SD-3 (Background)
Date Sampled		6/9/95	6/9/95	6/9/95	6/9/95
Time Sampled		1100	1000	1000	1245
Organic Traffic Report No. Inorganic Traffic Report No.		EAMS6 MEABH6	EAMS7 MEABH7	EAMS8 MEABH8	EAMS9 MEABH9
Sample Type		Environmental	Environmental	Duplicate (SD-2)	Environmental
VOLATILE ORGANIC COMPOUNDS	CRQL				
Chloromethane	10	ND	ND	ND	ND
Bromomethane	10	ND	ND	ND	ND
Vinyl Chloride	10	ND	ND	ND	ND
Chloroethane	10	ND	ND	ND	ND
Methylene Chloride	10	ND	ND	ND	ND
Acetone	10	ND	ND	ND	ND
Carbon Disulfide	10	ND	ND	ND	ND
1,1-Dichloroethene	10	ND	ND	ND	ND
1,1-Dichloroethane	10	ND	ND	ND	ND
1,2-Dichloroethene (Total)	10	ND	ND	ND	ND
Chloroform	10	ND	ND	ND	ND
1,2-Dichloroethane	10	ND	ND	ND	ND
2-Butanone	10	5 J	ND	ND	ND
1,1,1-Trichloroethane	10	ND	ND	ND	ND
Carbon Tetrachloride	10	ND	ND	ND	ND

TABLE B-3

SUMMARY OF SEDIMENT SAMPLE ANALYTICAL RESULTS (ORGANIC) (Continued)

Sampling Location		SD-1	SD-2	SD-2D	SD-3 (Background)
Date Sampled		6/9/95	6/9/95	6/9/95	6/9/95
Time Sampled		1100	1000	1000	1245
Organic Traffic Report No. Inorganic Traffic Report No.		EAMS6 MEABH6	EAMS7 MEABH7	EAMS8 MEABH8	EAMS9 MEABH9
Sample Type		Environmental	Environmental	Duplicate (SD-2)	Environmental
VOLATILE ORGANIC COMPOUNDS (Continued)	CRQL				
Bromodichloromethane	10	ND	ND	ND	ND
1,2-Dichloropropane	10	ND	ND	ND	ND
Trichloroethene	10	ND	ND	ND	ND
Dibromochloromethane	10	ND	ND	ND	ND
1,1,2-Trichloroethane	10	ND	ND	ND	ND
Benzene	10	ND	ND	ND	ND
trans-1,3-Dichloropropene	10	ND	ND	ND	ND
Bromoform	10	ND	ND	ND	ND
4-Methyl-2-pentanone	10	ND	ND	ND	ND
2-Hexanone	10	ND	ND	ND	ND
Tetrachloroethene	10	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	10	ND	ND	ND	ND
Toluene	10	ND	ND	ND	ND
Chlorobenzene	10	ND	ND	ND	ND
Ethylbenzene	10	ND	ND	ND	ND

TABLE B-3

SUMMARY OF SEDIMENT SAMPLE ANALYTICAL RESULTS (ORGANIC) (Continued)

Sampling Location		SD-1	SD-2	SD-2D	SD-3 (Background)
Date Sampled		6/9/95	6/9/95	6/9/95	6/9/95
Time Sampled		1100	1000	1000	1245
Organic Traffic Report No. Inorganic Traffic Report No.		EAMS6 MEABH6	EAMS7 MEABH7	EAMS8 MEABH8	EAMS9 MEABH9
Sample Type		Environmental	Environmental	Duplicate (SD-2)	Environmental
VOLATILE ORGANIC COMPOUNDS (Continued)	CRQL				
Styrene	10	ND	ND	ND	ND
Xylene (Total)	10	ND	ND	ND	ND
Tentatively Identified Compounds (Total)	10	ND	ND	9	7
SEMIVOLATILE ORGANIC COMPOUNDS					
Phenol	330	ND	ND	ND	ND
bis(2-Chloroethyl)ether	330	ND	ND	ND	ND
2-Chlorophenol	330	ND	ND	ND	ND
1,3-Dichlorobenzene	330	ND	ND	ND	ND
1,4-Dichlorobenzene	330	ND	ND	ND	ND
1,2-Dichlorobenzene	330	ND	ND	ND	ND
2-Methylphenol	330	ND	ND	ND	ND
2,2'-oxybis (1-Chloropropane)	330	ND	ND	ND	ND
4-Methylphenol	330	ND	ND	ND	ND
N-Nitroso-di-n-propylamine	330	ND	ND	ND	ND
Hexachloroethane	330	ND	ND	ND	ND

TABLE B-3

SUMMARY OF SEDIMENT SAMPLE ANALYTICAL RESULTS (ORGANIC) (Continued)

Sampling Location		SD-1	SD-2	SD-2D	SD-3 (Background)
Date Sampled		6/9/95	6/9/95	6/9/95	6/9/95
Time Sampled		1100	1000	1000	1245
Organic Traffic Report No. Inorganic Traffic Report No.		EAMS6 MEABH6	EAMS7 MEABH7	EAMS8 MEABH8	EAMS9 MEABH9
Sample Type		Environmental	Environmental	Duplicate (SD-2)	Environmental
SEMIVOLATILE ORGANIC COMPOUNDS (Continued)	CRQL				
Nitrobenzene	330	ND	ND	ND	ND
Isophorone	330	ND	ND	ND	ND
2-Nitrophenol	330	ND	ND	ND	ND
2,4-Dimethylphenol	330	ND	ND	ND	ND
bis(2-Chloroethoxy)methane	330	ND	ND	ND	ND
2,4-Dichlorophenol	330	ND	ND	ND	ND
1,2,4-Trichlorobenzene	330	ND	ND	ND	ND
Naphthalene	330	ND	ND	ND	ND
4-Chloroaniline	330	ND	ND	ND	ND
Hexachlorobutadiene	330	ND	ND	ND	ND
4-Chloro-3-methylphenol	330	ND	ND	ND	ND
2-Methylnaphthalene	330	ND	ND	ND	ND
Hexachlorocyclopentadiene	330	ND	ND	ND	ND
2,4,6-Trichlorophenol	330	ND	ND	ND	ND
2,4,5-Trichlorophenol	830	ND	ND	ND	ND

TABLE B-3

SUMMARY OF SEDIMENT SAMPLE ANALYTICAL RESULTS (ORGANIC) (Continued)

Sampling Location		SD-1	SD-2	SD-2D	SD-3 (Background)
Date Sampled		6/9/95	6/9/95	6/9/95	6/9/95
Time Sampled		1100	1000	1000	1245
Organic Traffic Report No. Inorganic Traffic Report No.		EAMS6 MEABH6	EAMS7 MEABH7	EAMS8 MEABH8	EAMS9 MEABH9
Sample Type		Environmental	Environmental	Duplicate (SD-2)	Environmental
SEMIVOLATILE ORGANIC COMPOUNDS (Continued)	CRQL				
2-Chloronaphthalene	330	ND	ND	ND	ND
2-Nitroaniline	830	ND	ND	ND	ND
Dimethylphthalate	330	ND	ND	ND	ND
Acenaphthylene	330	ND	ND	ND	ND
2,6-Dinitrotoluene	330	ND	ND	ND	ND
3-Nitroaniline	830	ND	ND	ND	ND
Acenaphthene	330	ND	ND	ND	ND
2,4-Dinitrophenol	830	ND	ND	ND	ND
4-Nitrophenol	830	ND	ND	ND	ND
Dibenzofuran	330	ND	ND	ND	ND
2,4-Dinitrotoluene	330	ND	ND	ND	ND
Diethylphthalate	330	ND	ND	ND	ND
4-Chlorophenyl-phenylether	330	ND	ND	ND	ND
Fluorene	330	ND	ND	ND	ND
4-Nitroaniline	830	ND	ND	ND	ND

TABLE B-3

SUMMARY OF SEDIMENT SAMPLE ANALYTICAL RESULTS (ORGANIC) (Continued)

Sampling Location		SD-1	SD-2	SD-2D	SD-3 (Background)
Date Sampled		6/9/95	6/9/95	6/9/95	6/9/95
Time Sampled		1100	1000	1000	1245
Organic Traffic Report No. Inorganic Traffic Report No.		EAMS6 MEABH6	EAMS7 MEABH7	EAMS8 MEABH8	EAMS9 MEABH9
Sample Type		Environmental	Environmental	Duplicate (SD-2)	Environmental
SEMIVOLATILE ORGANIC COMPOUNDS (Continued)	CRQL				
4,6-Dinitro-2-methylphenol	830	ND	ND	ND	ND
N-Nitrosodiphenylamine (1)	330	ND	ND	ND	ND
4-Bromophenyl-phenylether	330	ND	ND	ND	ND
Hexachlorobenzene	330	ND	ND	ND	ND
Pentachlorophenol	830	ND	ND	ND	ND
Phenanthrene	330	27 J	ND	ND	71 J
Anthracene	330	ND	ND	ND	ND
Carbazole	330	ND	ND	ND	ND
Di-n-butylphthalate	330	ND	ND	ND	22 J
Fluoranthene	330	23 J	ND	ND	140 J
Pyrene	330	ND	ND	ND	99 J
Butylbenzylphthalate	330	ND	ND	ND	ND
3,3'-Dichlorobenzidine	330	ND	ND	ND	ND
Benzo-(a)anthracene	330	ND	ND	ND	56 J
Chrysene	330	ND	ND	ND	61 J

TABLE B-3

SUMMARY OF SEDIMENT SAMPLE ANALYTICAL RESULTS (ORGANIC) (Continued)

Sampling Location		SD-1	SD-2	SD-2D	SD-3 (Background)
Date Sampled		6/9/95	6/9/95	6/9/95	6/9/95
Time Sampled		1100	1000	1000	1245
Organic Traffic Report No. Inorganic Traffic Report No.		EAMS6 MEABH6	EAMS7 MEABH7	EAMS8 MEABH8	EAMS9 MEABH9
Sample Type		Environmental	Environmental	Duplicate (SD-2)	Environmental
SEMIVOLATILE ORGANIC COMPOUNDS (Continued)	CRQL				
bis(2-Ethylhexyl)phthalate	330	80 J	38 J	22 J	52 J
Di-n-octyl Phthalate	330	ND	ND	ND	ND
Benzo(b)fluoranthene	330	ND	ND	ND	59 J
Benzo(k)fluoranthene	330	ND	ND	ND	47 J
Benzo(a)pyrene	330	ND	ND	ND	51 J
Indeno(1,2,3-cd)pyrene	330	ND	ND	ND	ND
Dibenzo(a,h)anthracene	330	ND	ND	ND	ND
Benzo(g,h,i)perylene	330	ND	ND	ND	ND
Tentatively Identified Compounds (Total)		1,340	600	ND	3,484
PESTICIDES/PCB COMPOUNDS					
alpha-BHC	1.7	ND	ND	ND	ND
beta-BHC	1.7	ND	ND	ND	ND
delta-BHC	1.7	ND	ND	ND	ND
gamma-BHC (Lindane)	1.7	ND	ND	ND	ND
Heptachlor	1.7	ND	ND	ND	ND

TABLE B-3

SUMMARY OF SEDIMENT SAMPLE ANALYTICAL RESULTS (ORGANIC) (Continued)

Sampling Location		SD-1	SD-2	SD-2D	SD-3 (Background)
Date Sampled		6/9/95	6/9/95	6/9/95	6/9/95
Time Sampled		1100	1000	1000	1245
Organic Traffic Report No. Inorganic Traffic Report No.		EAMS6 MEABH6	EAMS7 MEABH7	EAMS8 MEABH8	EAMS9 MEABH9
Sample Type		Environmental	Environmental	Duplicate (SD-2)	Environmental
PESTICIDES/PCB COMPOUNDS (Continued)	CRQL				
Aldrin	1.7	0.49 J	0.28 JP	ND	0.51 JP
Heptachlor Epoxide	1.7	0.56 J	0.24 J	ND	1.2 J
Endosulfan I	1.7	ND	ND	ND	ND
Dieldrin	3.3	ND	ND	ND	ND
4,4'-DDE	3.3	ND	ND	ND	ND
Endrin	3.3	ND	ND	ND	ND
Endosulfan II	3.3	ND	ND	ND	ND
4,4'-DDD	3.3	ND	ND	ND	ND
Endosulfan Sulfate	3.3	ND	ND	ND	ND
4,4'-DDT	3.3	ND	ND	ND	ND
Methoxychlor	17	ND	ND	ND	ND
Endrin Ketone	3.3	ND	ND	ND	ND
Endrin Aldehyde	3.3	ND	ND	ND	ND
alpha-Chlordane	1.7	ND	ND	ND	1.4 J
gamma-Chlordane	1.7	0.35 J	ND	ND	0.62 J

TABLE B-3

SUMMARY OF SEDIMENT SAMPLE ANALYTICAL RESULTS (ORGANIC) (Continued)

Sampling Location		SD-1	SD-2	SD-2D	SD-3 (Background)
Date Sampled		6/9/95	6/9/95	6/9/95	6/9/95
Time Sampled		1100	1000	1000	1245
Organic Traffic Report No. Inorganic Traffic Report No.		EAMS6 MEABH6	EAMS7 MEABH7	EAMS8 MEABH8	EAMS9 MEABH9
Sample Type		Environmental	Environmental	Duplicate (SD-2)	Environmental
PESTICIDES/PCB COMPOUNDS (Continued)	CRQL				
Toxaphene	170	ND	ND	ND	ND
Aroclor-1016	33	ND	ND	ND	ND
Aroclor-1221	67	ND	ND	ND	ND
Aroclor-1232	3.3	ND	ND	ND	ND
Aroclor-1242	3.3	ND	ND	ND	ND
Aroclor-1248	3.3	ND	ND	ND	ND
Aroclor-1254	3.3	ND	ND	ND	ND
Aroclor-1260	3.3	ND	ND	ND	ND

Notes:

* All concentrations are in micrograms per kilogram (μg/kg).

CRQL Contract-required quantitation limit

ND Not detected

J This indicates an estimated value. This flag is used either when a concentration is estimated for a tentatively identified compound or when the data indicates the presence of a compound but the result is less than the sample quantitation limit and greater than zero. The flag is also used to indicate a reported result having an associated quality control (QC) problem.

TABLE B-3

SUMMARY OF SEDIMENT SAMPLE ANALYTICAL RESULTS (ORGANIC) (Continued)

Notes (Continued):

P This indicates a pesticide or Aroclor target analyte when there is a greater than 25 percent difference in the detected concentrations in the two gas chromatograph (GC) columns. The lower of the two results is reported.

PCB Polychlorinated biphenyl

TABLE B-4

SUMMARY OF SEDIMENT SAMPLE ANALYTICAL RESULTS (INORGANIC)*

Sampling Location		SD-1	SD-2	SD-2D	SD-3 (Background)
Date Sampled		6/9/95	6/9/95	6/9/95	6/9/95
Time Sampled		1100	1000	1000	1245
Inorganic Traffic Report No. Organic Traffic Report No.		MEABH6 EAMS6	MEABH7 EAMS7	MEABH8 EAMS8	MEABH9 EAMS9
Sample Type		Environmental	Environmental	Duplicate (SD-2)	Environmental
INORGANIC ANALYTES	CRDL				
Aluminum	40	4,280	1,640	1,190	1,200
Antimony	12	1.1	ND	ND	ND
Arsenic	2	ND	ND	ND	ND
Barium	40	30.1	16.1	11.7	23.1
Beryllium	1	0.91 J	0.47 J	0.33 J	0.31 J
Cadmium	1	ND	ND	ND	ND
Calcium	1,000	676	644	382	327
Chromium	2	17.0 J	10.1 J	4.4 J	4.2 J
Cobalt	10	11.5	5.2	2.7	0.95
Copper	5	16.4	6.1	4.5	16.8
Iron	20	38,000 J	15,700 J	6,790 J	3,020 J
Lead	0.6	14.9 J	19.8 J	6.0 J	10.4 J
Magnesium	1,000	1,100	493	297	201
Manganese	3	619 J	356 J	145 J	48.2 J
Mercury	0.1	ND	ND	ND	ND

TABLE B-4

SUMMARY OF SEDIMENT SAMPLE ANALYTICAL RESULTS (INORGANIC) (Continued)

Sampling Location		SD-1	SD-2	SD-2D	SD-3 (Background)
Date Sampled		6/9/95	6/9/95	6/9/95	6/9/95
Time Sampled		1100	1000	1000	1245
Inorganic Traffic Report No. Organic Traffic Report No.		MEABH6 EAMS6	MEABH7 EAMS7	MEABH8 EAMS8	MEABH9 EAMS9
Sample Type		Environmental	Environmental	Duplicate (SD-2)	Environmental
INORGANIC ANALYTES (Continued)	CRDL				
Nickel	8	21.4	7.6	4.8	3.1
Potassium	1,000	766	181	163	123
Selenium	1	ND	ND	ND	ND
Silver	2	ND	ND	ND	ND
Sodium	1,000	343 J	126 J	111 J	124 J
Thallium	2	ND	ND	ND	ND
Vanadium	10	14.3	7.9	4.0	2.9
Zinc	4	49.2 J	29.3 J	17.4 J	23.6 J
Cyanide	2	ND	ND	ND	ND

Notes:

* All concentrations are in milligrams per kilogram (mg/kg).

CRDL Contract-required detection limit

ND Not detected

J This indicates that the associated value is an estimated quantity.

ENCLOSURE 2

U.S. ENVIRONMENTAL PROTECTION AGENCY
RECOMMENDATION FOR THE
JACKSON COUNTY LANDFILL SITE
EPA ID NO. OHD 980 993 554

(One Page)

U.S. ENVIRONMENTAL PROTECTION AGENCY RECOMMENDATION

Site Name:	Jackson County Landfill Jackson, Jackson County, Ohio
EPA ID No.:	OHD 980 993 554
Author:	Scott Brockway PRC Environmental Management, Inc. (414) 821-5894
Contractor Project Manager:	Christopher Scott PRC Environmental Management, Inc. (312) 856-8700

EPA RECOMMENDATION	SIGNATURE	DATE
"H": High priority for further site assessment	_____	_____
"L": Low priority for further site assessment	_____	_____
"D": Deferred to other authority (RCRA, TSCA, or NRC)	_____	_____
"N": No further action	_____	_____

EPA Comments:

_____

_____

_____

_____

ENCLOSURE 3

TRANSMITTAL MEMORANDUM
WITH PRELIMINARY HRS SCORESHEETS
FOR THE
JACKSON COUNTY LANDFILL SITE
JACKSON, JACKSON COUNTY, OHIO

(15 Pages)

MEMORANDUM

DATE: September 15, 1995

TO: Jeanne Griffin, Site Assessment Manager
U.S. Environmental Protection Agency (EPA)

FROM: Scott Brockway, PRC Environmental Management, Inc. (PRC)

SUBJECT: Focused Site Inspection Prioritization (FSIP)
Site Name: Jackson County Landfill (JCL)
Location: Jackson, Jackson County, Ohio
EPA ID No.: OHD 980 993 554

THIS DOCUMENT IS CONFIDENTIAL. Because of their predecisional nature, this memorandum and the attached preliminary Hazard Ranking System (HRS) scoresheets are not to be released to the public.

The FSIP report accompanies this transmittal memorandum and the preliminary HRS scoresheets.

The site has been evaluated to determine the need for immediate removal action as a result of a substantial threat to human health and the environment. PRC recommends the following:

___ The site **does** present a threat that requires immediate removal action.

_X_ The site **does not** present a threat that requires immediate removal action.

PRC has prepared the attached preliminary HRS scoresheets for the above-referenced site.

_X_ The preliminary HRS score is **below** 28.50.

___ The preliminary HRS score is **above** 28.50.

Following is a summary of factors affecting the preliminary HRS pathway scores.

The JCL site operated as a municipal landfill from 1962 until its closure in 1987. Landfilled waste occupies 22.5 acres of the site. In 1977, the landfill operator estimated that 30 percent of the received waste was generated by households and that 69.5 percent of the received waste was generated by a combination of commercial, agricultural, industrial, institutional, incinerator, and construction operations. The remaining 0.5 percent was sludge consisting of paint residue mixed with oil, water, and cleaning materials.

The preliminary HRS score for the JCL site is 6.18 based on an assumed observed release to the groundwater migration pathway and an observed release to the surface water migration pathway.

WASTE CHARACTERISTICS

No accurate records were found to document the specific quantities and types of wastes disposed of at the JCL site. The size of the landfill at the site is 22.5 acres. In 1984, the Goodyear Tire & Rubber Company (Goodyear) in Jackson, Ohio, estimated that it had disposed of 5,772 drums containing waste acetone mixture, waste paint mixture, and waste styrene mixture at the site from 1974 to 1984. Site representatives dispute the accuracy of this estimate and claim that the actual amount is less.

The hazardous waste quantity factor value can be based on either the size of the landfill or the number of drums of waste estimated to have been disposed of at the JCL site; basing the hazardous waste quantity factor value on either the landfill area or the waste volume results in a value of 100. The toxicity/mobility factor value for the groundwater migration pathway is based on chromium, which was detected at elevated concentrations in on-site soil samples and has a toxicity of 10,000. Mercury was also detected at elevated concentrations in on-site soil samples and was used to calculate the waste characteristics factor value for the surface water migration pathway. Mercury has a toxicity value of 10,000; a persistence value of 1; a bioaccumulation value of 50,000; and an ecotoxicity value of 10,000.

GROUNDWATER MIGRATION PATHWAY

No observed release to the groundwater migration pathway has been documented; however, no groundwater samples were collected during the 1985 screening site inspection (SSI) or during the FSIP sampling event. Therefore, to represent a worst case scenario, PRC conservatively assumed that an observed release of a hazardous substance with a toxicity factor value of 10,000 could be established if groundwater samples were collected from a monitoring well.

The nearest drinking water well is located less than 0.25 mile south of the JCL site. No Level I or Level II contamination has been identified at the site or was assumed. A total of 945 residents living within a 4-mile radius of the site receive their drinking water from private wells, which are typically screened in sandstone deposits that are also present in outcrops at the site. The depth to groundwater (static water level) near the site varies from 4 to 77 feet below ground surface (bgs). No municipal groundwater wells are located within 4 miles of the site. No wellhead protection programs are in effect within 4 miles of the site.

SURFACE WATER MIGRATION PATHWAY

An observed release from the JCL site to Little Salt Creek has been documented. According to analytical results from the FSIP sampling event, nickel was present at elevated concentrations in both

soil and sediment samples. No drinking water intakes are located within the 15-mile target distance limit (TDL). Little Salt Creek is used for recreational purposes. Fishery production in the creek is minimal; based on discussions with the Ohio Department of Natural Resources (ODNR), PRC estimates that less than 100 pounds of fish from Little Salt Creek is consumed annually. The flow rate of Little Salt Creek is estimated to be 10 cubic feet per second. No endangered or threatened species have been identified in Jackson County. About 4 miles of wetlands fronts Little Salt Creek within the TDL.

SOIL EXPOSURE PATHWAY

Based on analytical results for soil samples collected during the FSIP sampling event, 229,688 square feet (ft^2) of surficial contamination was delineated at the JCL site. Vegetation covers much of the ground surface at the site; therefore, contaminant migration is unlikely. Also, no residences, schools, day-care facilities, or resources lie within 200 feet of the site or areas of observed contamination. A total of 24 people are employed on site. The nearest resident lives about 500 feet south of the site. Site access is unrestricted. About 1,167 people live within 1 mile of the site. The soil exposure pathway contributes only minimally to the overall site score. Therefore, no scoresheets for the soil exposure pathway are included herein.

AIR MIGRATION PATHWAY

No air releases at the JCL site have been documented. The site is not known to contain sources of hazardous substances that are likely to cause a release of hazardous gas. No airborne particulates were observed during the JCL site reconnaissance on January 19, 1995 or the sampling visit on June 9, 1995. Many wetland environments greater than 1 acre in size were identified within 4 miles of the site. About 10,640 people live within 4 miles of the site. No scoresheets for the air migration pathway are included herein because the pathway contributes only minimally to the overall site score.

Jackson County Landfill
Jackson, Ohio
OHD 980 993 554

WORKSHEET FOR COMPUTING PRELIMINARY HRS SITE SCORE

		Pathway Score (S)	Pathway Score Squared (S^2)
1.	Groundwater Migration Pathway Score (S_{gw})	8.96	80.28
2a.	Surface Water Overland/Flood Migration Component (S_{of})	8.52	72.59
2b.	Groundwater to Surface Water Migration Component (S_{gs})	NI	NI
2c.	Surface Water Migration Pathway Score (S_{sw})	8.52	72.59
	(Enter the larger of lines 2a and 2b.)		
3.	Soil Exposure Pathway Score (S_s)	NI	NI
4.	Air Migration Pathway Score (S_a)	NI	NI
5.	$S_{gw}^2 + S_{sw}^2 + S_s^2 + S_a^2$		152.87
6.	**HRS Site Score**		6.18
	(Divide the value on line 5 by 4.0 and take the square root.)		

NI = Score not included because available information suggests that the pathway contributes little to the overall site score

Jackson County Landfill
Jackson, Ohio
OHD 980 993 554

SOURCE CHARACTERIZATION WORKSHEET

Source: Landfill

A. Source Dimensions and Hazardous Waste Quantity

Hazardous Constituent Quantity: NE

Hazardous Waste Stream Quantity: NE

Volume: 5,772 drums x 50 gallons/drum = 288,600 gallons

Area: 22.5 acres x 43,560 ft^2/acre = 980,100 ft^2

Area of Observed Contamination: NE

B. Hazardous Substances Associated with the Source

Hazardous Substance	Available to Pathway						
	Air		Ground-water (GW)	Surface Water (SW)		Soil	
	Gas	Particulate		Overland/ Flood	GW to SW	Resi-dent	Near-by
Acetone	Yes	Yes	Yes	Yes	No	Yes	Yes
Barium	No	Yes	Yes	Yes	No	Yes	Yes
Bis(2-ethylhexyl)phthalate	No	Yes	Yes	Yes	No	Yes	Yes
Chromium	No	Yes	Yes	Yes	No	Yes	Yes
Copper	No	Yes	Yes	Yes	No	Yes	Yes
Cyclohexanone	Yes	Yes	Yes	Yes	No	Yes	Yes
Ethylbenzene	Yes	Yes	Yes	Yes	No	Yes	Yes
Isobutyl Alcohol	Yes	Yes	Yes	Yes	No	Yes	Yes
Mercury	No	Yes	Yes	Yes	No	Yes	Yes
Methylene Chloride	Yes	Yes	Yes	Yes	No	Yes	Yes
Methyl Ethyl Ketone	Yes	Yes	Yes	Yes	No	Yes	Yes
Methyl Isobutyl Ketone	Yes	Yes	Yes	Yes	No	Yes	Yes
Nickel	No	Yes	Yes	Yes	No	Yes	Yes

SOURCE CHARACTERIZATION WORKSHEET (Continued)

Hazardous Substance	Available to Pathway						
	Air		Ground-water (GW)	Surface Water (SW)		Soil	
	Gas	Particulate		Overland/ Flood	GW to SW	Resi-dent	Near-by
Styrene	Yes	Yes	Yes	Yes	No	Yes	Yes
Toluene	Yes	Yes	Yes	Yes	No	Yes	Yes
Xylene	Yes	Yes	Yes	Yes	No	Yes	Yes

NE = Not evaluated because of lack of information

GROUNDWATER PATHWAY SUMMARY

	Comments	References
•	No observed releases to groundwater have been documented. However, only one groundwater sample has been collected at the site, and no landfill liner is present at the site. Therefore, PRC assumed an observed release to groundwater in order to represent a worst case scenario.	OEPA 1986; E&E 1985
•	PRC assumed an observed release of chromium, which has a toxicity factor value of 10,000 and has been detected at elevated concentrations in on-site soil samples. In accordance with Section 3.2.1.2 of the HRS Final Rule, a mobility factor value of 1 was assigned because an observed release was assumed.	EPA 1990, 1994, and 1995b
•	The site's hazardous waste quantity factor value can be calculated based on the area of the landfill being 22.5 acres (980,100 ft^2) and on the volume of waste (5,772 drums or 288,600 gallons) disposed of at the site by Goodyear, both of which result in a hazardous waste quantity factor value of 100 per Table 2-6 of the HRS Final Rule.	PRC 1995c; EPA 1990 and 1994; Goodyear 1984
•	Using a hazardous waste quantity factor value of 100 and a toxicity/mobility factor value of 10,000, a value of 32 was assigned to the waste characteristics factor category in accordance with Table 2-7 of the HRS Final Rule.	EPA 1990
•	The wells nearest the site are residential wells and are located within 0.25 mile of the site. Therefore, a nearest well factor value of 20 was assigned in accordance with Table 3-11 of the HRS Final Rule.	Frost 1995; EPA 1990
•	PRC assumed that groundwater is used as a resource within 4 miles of the site. Therefore, a resource factor value of 5 was assigned in accordance with Section 3.3.3 of the HRS Final Rule.	EPA 1990
•	Groundwater is not used as a municipal water supply within 4 miles of the site.	PRC 1995b
•	The site is not located in a wellhead protection area.	PRC 1995c
•	The following table provides information regarding the groundwater target population associated with the site.	

GROUNDWATER PATHWAY SUMMARY (Continued)

Distance (Miles)	No. of Residential Wells	Population Served by Residential Wells	No. of Municipal Wells	Population Served by Municipal Wells	Total Population	Ref.
0-1/4	2	3	0	0	3	Frost 1995; PRC 1995c
1/4-1/2	10	19	0	0	19	Frost 1995; PRC 1995c
1/2-1	24	43	0	0	43	Frost 1995; PRC 1995c
1-2	94	166	0	0	166	Frost 1995; PRC 1995c
2-3	165	309	0	0	309	Frost 1995; PRC 1995c
3-4	213	405	0	0	405	Frost 1995; PRC 1995c

Jackson County Landfill
Jackson, Ohio
OHD 980 993 554

GROUNDWATER PATHWAY SCORESHEET

	Factor Categories and Factors	Maximum Value	Value Assigned	
	Likelihood of Release to an Aquifer			
1.	Observed Release[a]	550	550	
2.	Potential to Release			
	2a. Containment	10	0	
	2b. Net Precipitation	10	0	
	2c. Depth to Aquifer	5	0	
	2d. Travel Time	35	0	
	2e. Potential to Release [lines 2a x (2b + 2c + 2d)]	500	0	
3.	Likelihood of Release [higher of lines 1 and 2e]	550		550
	Waste Characteristics			
4.	Toxicity/Mobility	a	10,000	
5.	Hazardous Waste Quantity	a	100	
6.	Waste Characteristics	100		32
	Targets			
7.	Nearest Well	50	20	
8.	Population			
	8a. Level I Concentrations	b	0	
	8b. Level II Concentrations	b	0	
	8c. Potential Contamination	b	17	
	8d. Population [lines 8a + 8b + 8c]	b	17	
9.	Resources	5	5	
10.	Wellhead Protection Area	20	0	
11.	Targets [lines 7 + 8d + 9 + 10]	b		42
	Groundwater Migration Score for an Aquifer			
12.	Aquifer Score [lines (3 x 6 x 11)/82,500][c]	100		8.96
13.	**Groundwater Pathway Score (S_{gw})[c]**	100		8.96

[a] Maximum value applies to waste characteristics category
[b] Maximum value not applicable
[c] Do not round to nearest integer

SURFACE WATER PATHWAY SUMMARY

Comments	References
• A release from the JCL site to the surface water pathway has been documented. Sediment samples collected from Little Salt Creek and soil samples collected at the landfill contained elevated concentrations of nickel.	EPA 1990, 1995a, and 1995b
• A toxicity/persistence factor value of 10,000 was calculated using mercury. Mercury, which was detected at elevated concentrations in on-site soil samples, has a toxicity value of 10,000 and a persistence value of 1.	EPA 1994 and 1995b
• The site's hazardous waste quantity factor value can be calculated based on the area of the landfill being 22.5 acres (980,100 ft^2) or on the volume of waste (5,772 drums or 288,600 gallons) disposed of at the site by Goodyear, both of which result in a factor value of 100 per Table 2-6 of the HRS Final Rule.	PRC 1995c; Goodyear 1984; EPA 1990
• Based on the toxicity/persistence and hazardous waste quantity factor values, a waste characteristics factor value of 32 was assigned for the drinking water threat.	EPA 1990
• No drinking water intakes exist within the 15-mile TDL.	PRC 1995b
• A toxicity/persistence/bioaccumulation factor value for the human food chain threat was assigned based on mercury. Mercury has a toxicity value of 10,000; a persistence value of 1; and a bioaccumulation value of 50,000.	EPA 1994
• A waste characteristics factor value of 320 was assigned for the human food chain threat in accordance with Table 2-7 of the HRS Final Rule.	EPA 1990
• Little Salt Creek has an estimated flow rate of 10 cubic feet per second, resulting in a dilution weight of 0.1 per Table 4-13 of the HRS Final Rule.	PRC 1995c; EPA 1990
• Because no observed release of a hazardous substance with a bioaccumulation factor value of 500 or greater has been documented, a food chain individual factor value of 2 was calculated by multiplying the dilution weight of 0.1 by 20 in accordance with Section 4.1.3.3.1 of the HRS Final Rule.	EPA 1990 and 1995a
• Little Salt Creek is used for recreational purposes, including fishing. Fishery production in Little Salt Creek within the 15-mile TDL is minimal; therefore, based on conversations with ODNR, PRC assumed that less than 100 pounds of fish from the creek is consumed annually. A human food chain population value of 0.03 was assigned in accordance with Table 4-18 of the HRS Final Rule.	PRC 1995a; EPA 1990

SURFACE WATER PATHWAY SUMMARY (Continued)

Comments	References
• Using the dilution weight and the human food chain population value, a potential contamination factor value of 0.0003 was assigned in accordance with Section 4.1.3.3.1 of the HRS Final Rule.	EPA 1990
• An ecotoxicity/persistence/bioaccumulation factor value of 5×10^8 was calculated using mercury. Mercury has an ecotoxicity value of 10,000; a persistence value of 1; and a bioaccumulation value of 50,000.	EPA 1994
• A waste characteristics factor value of 320 was assigned for the environmental threat in accordance with Table 2-7 of the HRS Final Rule.	EPA 1990
• Approximately 4 linear miles of wetlands is present along Little Salt Creek within the 15-mile TDL. Therefore, a wetland rating value of 150 was assigned in accordance with Table 2-24 of the HRS Final Rule. Using the surface water dilution weight of 0.1, an environmental threat potential contamination target value of 1 was calculated in accordance with Section 4.1.4.3.1.3 of the HRS Final Rule.	USDI 1983a and 1983b; EPA 1990
• The groundwater to surface water migration component is not included because it results in a lower pathway score than the surface water overland/flood migration component.	

Jackson County Landfill
Jackson, Ohio
OHD 980 993 554

SURFACE WATER OVERLAND/FLOOD MIGRATION COMPONENT SCORESHEET

	Factor Categories and Factors	Maximum Value	Value Assigned	
	Drinking Water Threat			
	Likelihood of Release			
1.	Observed Release	550	550	
2.	Potential to Release by Overland Flow			
	2a. Containment	10	0	
	2b. Runoff	25	0	
	2c. Distance to Surface Water	25	0	
	2d. Potential to Release by Overland Flow [lines 2a x (2b + 2c)]	500	0	
3.	Potential To Release by Flood			
	3a. Flood Containment	10	0	
	3b. Flood Frequency	50	0	
	3c. Potential to Release by Flood [lines 3a x 3b]	500	0	
4.	Potential to Release [lines 2d + 3c]	500	0	
5.	Likelihood of Release [higher of lines 1 and 4]	550		550
	Waste Characteristics			
6.	Toxicity/Persistence	a	10,000	
7.	Hazardous Waste Quantity	a	100	
8.	Waste Characteristics	100		32
	Targets			
9.	Nearest Intake	50	0	
10.	Population			
	10a. Level I Concentrations	b	0	
	10b. Level II Concentrations	b	0	
	10c. Potential Contamination	b	0	
	10d. Population [lines 10a + 10b + 10c]	b	0	
11.	Resources	5	0	
12.	Targets [lines 9 + 10d + 11]	b	0	0
13.	**Drinking Water Threat Score** [lines (5 x 8 x 12)/82,500][c]	500		0

[a] Maximum value applies to waste characteristics category
[b] Maximum value not applicable
[c] Do not round to nearest integer

SURFACE WATER OVERLAND/FLOOD MIGRATION COMPONENT SCORESHEET (Continued)

	Factor Categories and Factors	Maximum Value	Value Assigned	
	Human Food Chain Threat			
	Likelihood of Release			
14.	Likelihood of Release [same value as line 5]	550		550
	Waste Characteristics			
15.	Toxicity/Persistence/Bioaccumulation	a	5×10^8	
16.	Hazardous Waste Quantity	a	100	
17.	Waste Characteristics	1,000		320
	Targets			
18.	Food Chain Individual	50	2	
19.	Population			
	19a. Level I Concentrations	b	0	
	19b. Level II Concentrations	b	0	
	19c. Potential Contamination	b	0.0003	
	19d. Population [lines 19a + 19b + 19c]	b	0.0003	
20.	Targets [lines 18 + 19d]	b		2.0003
21.	**Human Food Chain Threat Score** [lines (14 x 17 x 20)/82,500][c]	100		4.26

[a] Maximum value applies to waste characteristics category
[b] Maximum value not applicable
[c] Do not round to nearest integer

SURFACE WATER OVERLAND/FLOOD MIGRATION COMPONENT SCORESHEET (Continued)

Factor Categories and Factors		Maximum Value	Value Assigned	
Environmental Threat				
Likelihood of Release				
22.	Likelihood of Release [same value as line 5]	550		550
	Waste Characteristics			
23.	Ecosystem Toxicity/Persistence/ Bioaccumulation	a	5×10^8	
24.	Hazardous Waste Quantity	a	100	
25.	Waste Characteristics	1,000		320
	Targets			
26.	Sensitive Environments			
	26a. Level I Concentrations	b	0	
	26b. Level II Concentrations	b	0	
	26c. Potential Contamination	b	2	
27.	Targets [lines 26a + 26b + 26c]	b		2
28.	**Environmental Threat Score** [lines (22 x 25 x 27)/82,500]	60		4.26
	Surface Overland/Flood Migration Component Score for a Watershed			
29.	Watershed Score [lines 13 + 21 + 28][c]	100		8.52
30.	**Surface Water Overland/Flood Migration Component Score (S_{of})** [highest score from line 29 for all watersheds evaluated][c]	100		8.52

a Maximum value applies to waste characteristics category
b Maximum value not applicable
c Do not round to nearest integer

REFERENCES

Ecology and Environment, Inc. (E&E). 1985. U.S. Environmental Protection Agency (EPA) form 2070-13 (7-81). March 28.

Frost Associates (Frost). 1995. CENTRACTS Report for Jackson County Landfill Site. February 17.

Goodyear Tire & Rubber Company (Goodyear). 1984. Letter Regarding Comprehensive Environmental Response, Compensation, and Liability Act Status. From F.C. Betzhold, Manager, Chemical and Environmental Protection. To Ben L. Pfefferle, Attorney, Ohio Environmental Protection Agency. June 4.

Ohio Environmental Protection Agency (OEPA). 1986. Letter Regarding Water Sample Analysis. From Michael J. Starkey, Environmental Scientist. To J. Gregory Fields. March 10.

PRC Environmental Management, Inc. (PRC). 1995a. Record of Telephone Conversation Regarding Fishery Status of Little Salt Creek. Between Scott J. Brockway and Mike Greenlee, Ohio Department of Natural Resources, Division of Wildlife, District 4. January 17.

PRC. 1995b. Record of Telephone Conversation Regarding Jackson Municipal Water Supply. Between Scott J. Brockway and Tami Norman, Jackson County Water Department. January 17.

PRC. 1995c. Field Logbook Notes Taken During Site Reconnaissance at Jackson County Landfill Site. Prepared by Scott J. Brockway. January 19.

U.S. Department of the Interior (USDI). 1983a. National Wetlands Inventory Map of Jackson, Ohio. Fish and Wildlife Service. September 19.

USDI. 1983b. National Wetlands Inventory Map of Byer, Ohio. Fish and Wildlife Service. October 5.

U.S. Environmental Protection Agency (EPA). 1990. Hazard Ranking System Final Rule. 55 *Federal Register* 51583. December 14.

EPA. 1994. Superfund Chemical Data Matrix. June 24.

EPA. 1995a. Laboratory Analytical Result Package for Jackson County Landfill. Samples No. MEABH6 through MEABH9. From Dennis Wesolowski, Chief, Contract Analytical Services Section (CASS). Reviewed on June 23.

EPA. 1995b. Laboratory Analytical Result Package for Jackson County Landfill. Samples No. MEABH1 through MEABH5. From Dennis Wesolowski, Chief, CASS. Reviewed on June 27.